Engineering Library SEP 7 1927

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

Vol. 53 SEPTEMBER, 1927 No. 295

Contents

The Naval War College.—Pratt	937
The Last Cruise of the Old "Trenton."—Lloyd	948
The Wreck of the Old "Trenton."	953
Bully Hayes—Pirate De Luxe.—Musser	956
Incentive in the Junior Grades.—Edwards	962
The First Long Range High Frequency Radio Tests.—Schnell	965
The "Scorpion" Passes.—Cluverius	969
Reconciling Recent Static Research with Various Theories on Atmospheric Pressure.—Kincaid	974
Analysis of Recent Trans-Atlantic Flights.—Ramsey and Kincaid	986
Discussion	1000
Professional Notes	1003
Notes on International Affairs	1021
Book Reviews	1025
American Samoa.—Pollock	1029
Secretary's Notes	1037

Fuel Oil

Gas Oil

Diesel Oil

There is more power in

THAT GOOD GULF GASOLINE

and

SUPREME MOTOR OIL

GULF REFINING COMPANY

New York Boston New Orleans

Philadelphia Atlanta Houston

General Sales Office

PITTSBURGH, PA.

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

For the advancement of professional, literary and scientific knowledge in the Navy.

September, 1927

Edited by CAPT. H. A. BALDRIDGE, *U.S.N.*
Ass't Editor-LIEUT. F. L. JOHNSON, *U.S.N.*

Associate Editors
LIEUT. COMDR. W. G. GREENMAN, U.S.N.
PROFESSOR ALLAN F. WESTCOTT, U.S.N.A.
ASSISTANT PROFESSOR HENRY BLUESTONE, U.S.N.A.

United States Naval Institute
Publication Office: Menasha, Wisconsin
Editorial and Business Office: Annapolis, Maryland
Advertising Department: McGill Bldg., Washington, D.C.

"The CORSAIR"

This new Vought creation is an outstanding achievement in the development of high performance military aircraft. Thruout it evidences a high order of aerodynamic and mechanical merit.

The "CORSAIR" meets the latest demands of the U. S. Navy for high performance Naval Aircraft.

It will out-fly and out-maneuver, at high altitudes, all other standard service type Single-Seater Fighters, and Two-Seater, Landplanes and Seaplanes.

The "CORSAIR" is now in production and deliveries will shortly be made to the U. S. Naval Air Service for UO replacement.

The "Corsair" is designed around the P. & W. "Wasp" Engine

CHANCE VOUGHT CORPORATION

LONG ISLAND CITY NEW YORK

Mention the Naval Institute—It Identifies You

September 1927
Vol. No. 53, No. 9 Whole No. 295

Contents

THE NAVAL WAR COLLEGE
By Rear Admiral W. V. Pratt, U. S. Navy 937

THE LAST CRUISE OF THE OLD "TRENTON"
By John H. Lloyd, Formerly Chief Electrician, U. S. Navy 948

THE WRECK OF THE OLD "TRENTON"
From the "London Times," April, 1889 953

BULLY HAYES—PIRATE DE LUXE
By J. B. Musser 956

INCENTIVE IN THE JUNIOR GRADES
By Lieutenant Commander W. Atlee Edwards, U. S. Navy 962

THE FIRST LONG RANGE HIGH FREQUENCY RADIO TESTS
By Lieutenant Commander F. H. Schnell, U. S. Naval Reserve 965

THE "SCORPION" PASSES
By Captain W. T. Cluverius, U. S. Navy 969

RECONCILING RECENT STATIC RESEARCH WITH VARIOUS THEORIES ON ATMOSPHERIC PRESSURE
By Lieutenant E. H. Kincaid, U. S. Navy 974

ANALYSIS OF RECENT TRANS-ATLANTIC FLIGHTS
By Lieutenant L. C. Ramsey, U. S. Navy, and Lieutenant E. H. Kincaid, U. S. Navy 986

DISCUSSIONS 1000

PROFESSIONAL NOTES 1003

NOTES ON INTERNATIONAL AFFAIRS 1021

BOOK REVIEWS 1025

AMERICAN SAMOA
By Captain Edwin T. Pollock, U. S. Navy (Retired) 1029

SECRETARY'S NOTES 1037

The writers only are responsible for the contents of their respective articles.

Editor, Captain H. A. Baldridge; Assistant Editor, Lieutenant F. L. Johnson.
Published monthly at 450 Ahnaip St., Menasha, Wis.
Executive, Editorial, and Business Offices, U. S. Naval Institute, Annapolis, Md.
Advertising Department, McGill Building, Washington, D.C.
Entered as second-class matter at the post-office at Menasha, Wis., April 4, 1922, and at the post-office at Annapolis, Md., under Act of Aug. 24, 1912. Acceptance for mailing at the special rate of postage provided for in section 1103, Act of Oct. 3, 1919, authorized Mar. 13, 1922.
Membership dues (including Proceedings), $3.00 a year.
Subscription Rate, $5.00 a year. (Foreign postage, $1.00 extra). Single copies, 50c.

Copyright, 1927, by U. S. Naval Institute

Officers of the Institute

President - - - Rear Admiral HILARY P. JONES, U. S. Navy
Vice-President - Rear Admiral LOUIS M. NULTON, U. S. Navy
Secretary-Treasurer - - Captain H. A. BALDRIDGE, U. S. Navy

Board of Control

Rear Admiral HILARY P. JONES, U. S. Navy *(Ex-officio)*
Rear Admiral LOUIS M. NULTON, U. S. Navy *(Ex-officio)*
Brigadier General GEORGE RICHARDS, U. S. Marine Corps
Captain W. G. DuBOSE, (CC), U. S. Navy
Captain GILBERT J. ROWCLIFF, U. S. Navy
Captain CHARLES E. SMITH, U. S. Navy
Commander G. V. STEWART, U. S. Navy
Commander R. M. BRAINARD, U. S. Navy
Captain H. A. BALDRIDGE, U. S. Navy *(Ex-officio)*

Past Presidents

Admiral DAVID D. PORTER, U. S. Navy, 1873
Rear Admiral JOHN L. WORDEN, U. S. Navy, 1874
Rear Admiral C. R. RODGERS, U. S. Navy, 1875-78
Commodore FOXHALL A. PARKER, U. S. Navy, 1878-79
Rear Admiral JOHN RODGERS, U. S. Navy, 1879-82
Rear Admiral C. R. P. RODGERS, U. S. Navy, 1882-83
Rear Admiral THORNTON A. JENKINS, U. S. Navy, 1883-85
Rear Admiral EDWARD SIMPSON, U. S. Navy, 1885-87
Rear Admiral STEPHEN B. LUCE, U. S. Navy, 1887-98
Rear Admiral WM. T. SAMPSON, U. S. Navy, 1898-1902
Rear Admiral H. C. TAYLOR, U. S. Navy, 1902-04
Rear Admiral C. F. GOODRICH, U. S. Navy, 1904-09
Rear Admiral RICHARD WAINWRIGHT, U. S. Navy, 1909-11
Rear Admiral BRADLEY A. FISKE, U. S. Navy, 1911-23
Rear Admiral WILLIAM A. RODGERS, U. S. Navy, 1923-24
Rear Admiral HENRY B. WILSON, U. S. Navy, 1924-26

PERHAPS YOU ARE ELIGIBLE TO JOIN THE

U. S. NAVAL INSTITUTE

Founded in 1873

For the Advancement of Professional, Literary and Scientific Knowledge in the Navy

Admiral David D. Porter was
its first President

(9 Out of Every 10 Flag Officers Are Members)

For over half a century

U. S. Naval Institute Proceedings

has been the *Navy's Forum*

Published Monthly—Illustrated

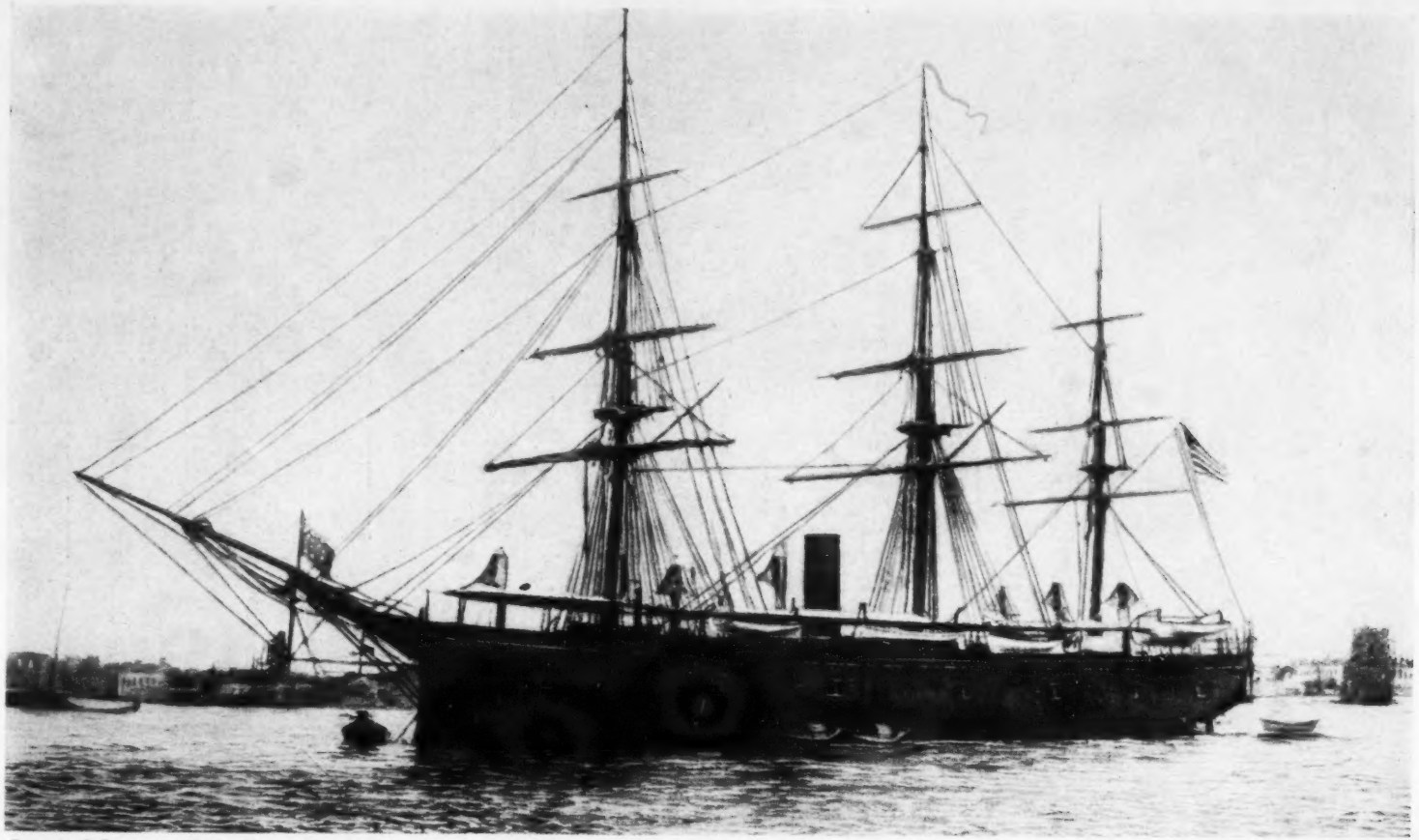
Are you a member of a yacht club, engineering or scientific society? Are you interested in the sea, in things nautical, in ships, your Navy, radio, aviation, general engineering subjects, foreign affairs and policies? If so you will be interested in belonging to an organization that has had for its Presidents men of the character of Porter, Worden (*Monitor-Merrimac* fame), the Rodgers, Luce, Sampson, Wainwright and other distinguished fellow countrymen.

How to become an Associate Member—The regular subscription rates to the PROCEEDINGS are $5.00 per year. You are eligible to become an Associate Member if you are "interested in the objects of the Institute" and are an American citizen of good standing and character in your community (write Secretary for further information as to details). The annual dues, $3.00, are the same as paid for regular membership by officers of the U.S. Navy, Marine Corps and Coast Guard, and entitle you to receive each month at no additional cost our magazine. Reserve officers of all branches of U.S. services are eligible for Associate Memberships.

The pages of the PROCEEDINGS, of which this issue is a fair sample, cover a wide range of interesting subjects, accompanied by beautiful illustrations, pertaining to the sea. The contributors, both foreign and American, officers and civilians, many of whom are distinguished in their specialties, so write as to interest both the associate and regular members as well as lay readers. In addition to the leading articles in the main body of the magazine, there are departments under the following headings: Discussions, Professional Notes, Notes on International Affairs, Book Reviews, and Secretary's Notes. For further information address Secretary-Treasurer.

ANNUAL DUES $3.00 *(Including Proceedings)*
(Regular Subscription $5.00 Per Year)

Address SECRETARY-TREASURER, U. S. NAVAL INSTITUTE
ANNAPOLIS, MD., U. S. A.



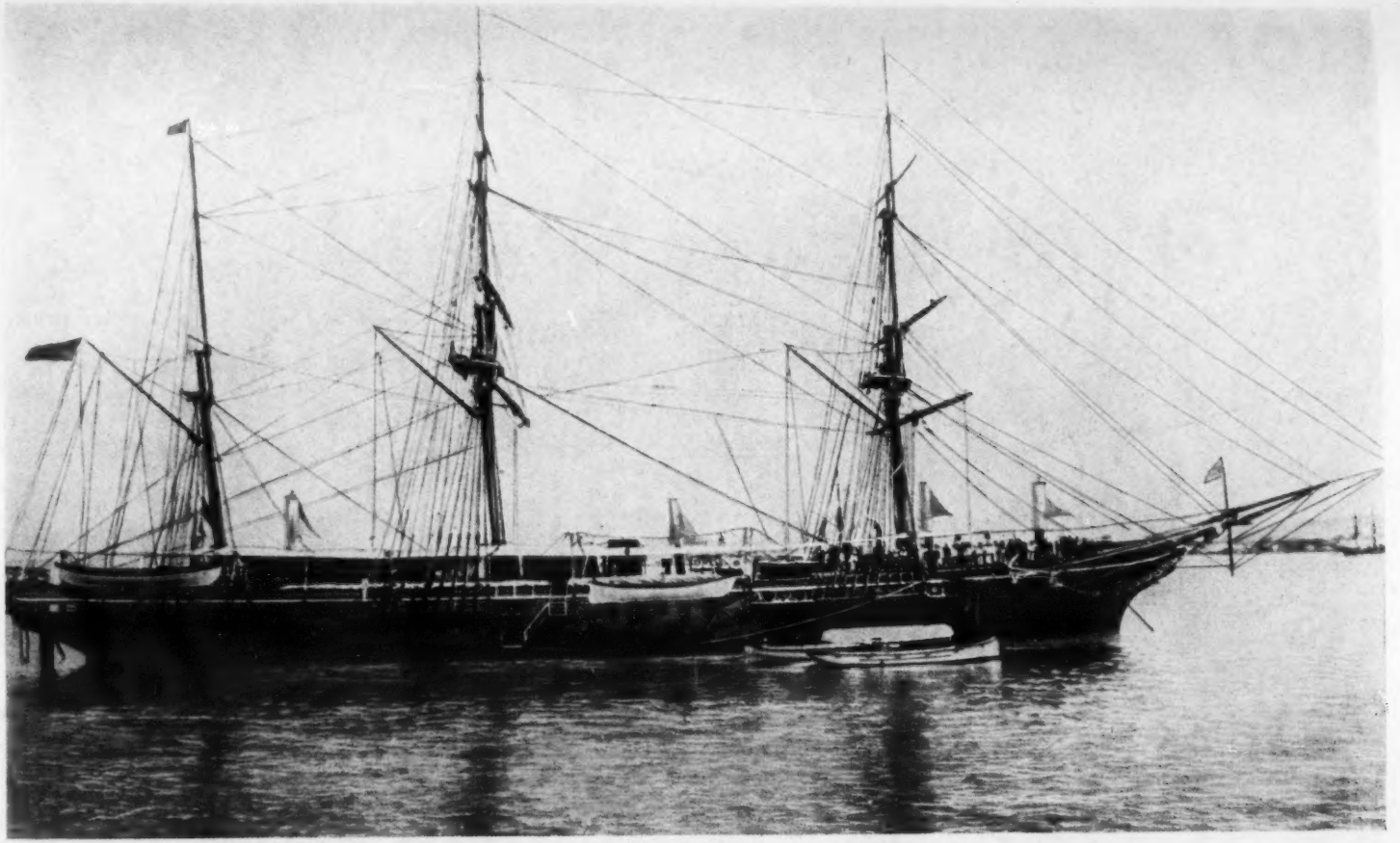
Report of Secretary of the Navy, 1889

U.S.S. "TRENTON"

Flagship of Rear Admiral L. A. Kimberly, U. S. Navy, as that vessel appeared before her destruction by the great hurricane that swept over the harbor of Apia, Samoa, March 15-17, 1889. Admiral R. H. Jackson, U. S. Navy, then a naval cadet, led the crew into the rigging to form a human sail. See Secretary's Notes, page 1042.

U.S.S. "TRENTON"

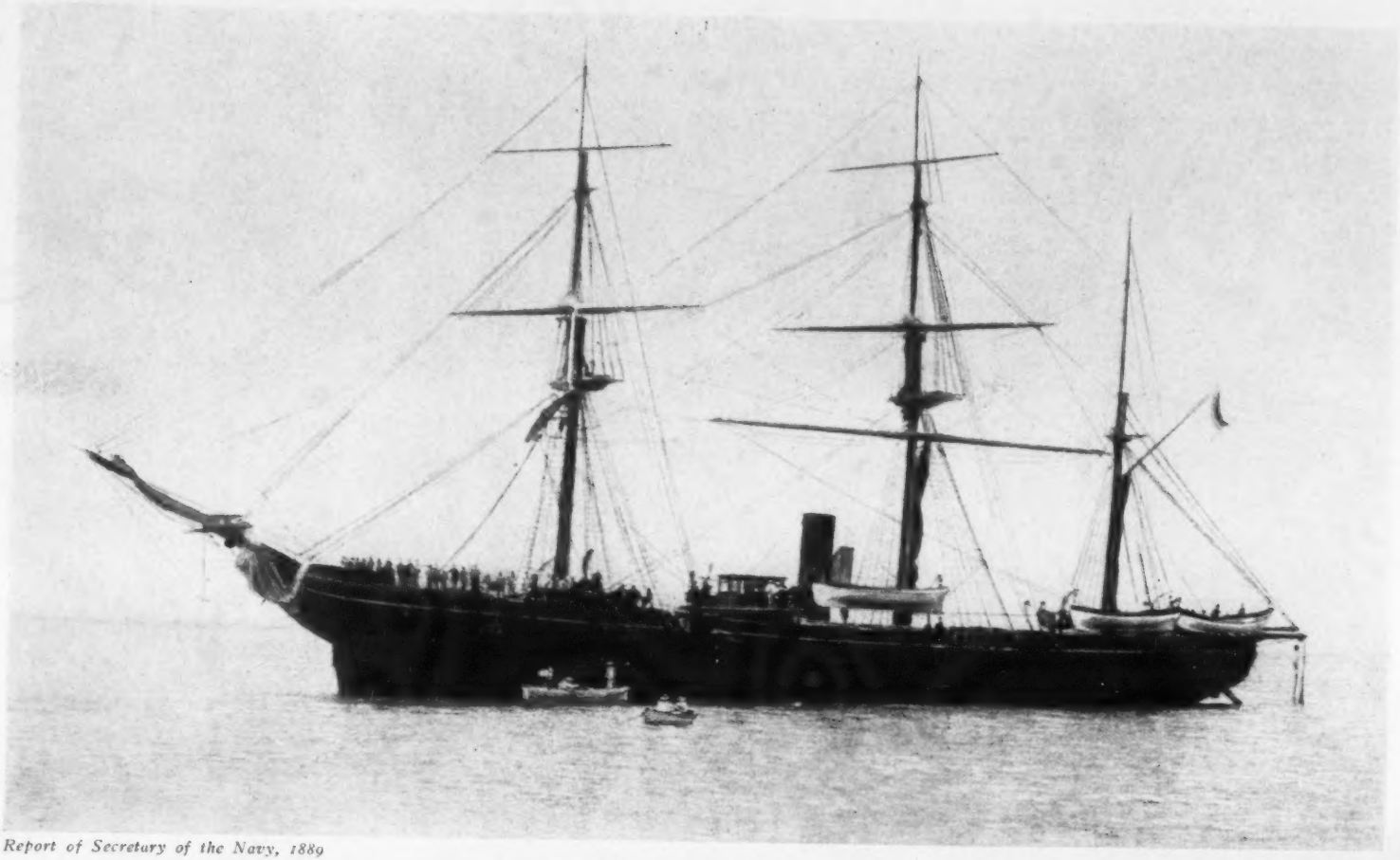
Flagship of Rear Admiral L. A. Kimberly, U. S. Navy, as that vessel appeared before her destruction by the great hurricane that swept over the harbor of Apia, Samoa, March 15-17, 1889. Admiral R. H. Jackson, U. S. Navy, then a naval cadet, led the crew into the rigging to form a human sail. See Secretary's Notes, page 1042.



Report of Secretary of the Navy, 1889

U.S.S. "VANDALIA"

Lost at Apia, Samoa, in the great hurricane as was also her commanding officer, Captain C. M. Schoonmaker. The new Commander-in-Chief of the United States Fleet, Admiral Henry A. Wiley and the present Major General Commandant of the Marine Corps, Major General Lejeune, were naval cadets on board the *Vandalia* at the time of the disaster and their conduct was the subject of a commendatory letter. See Secretary's Notes, page 1042.



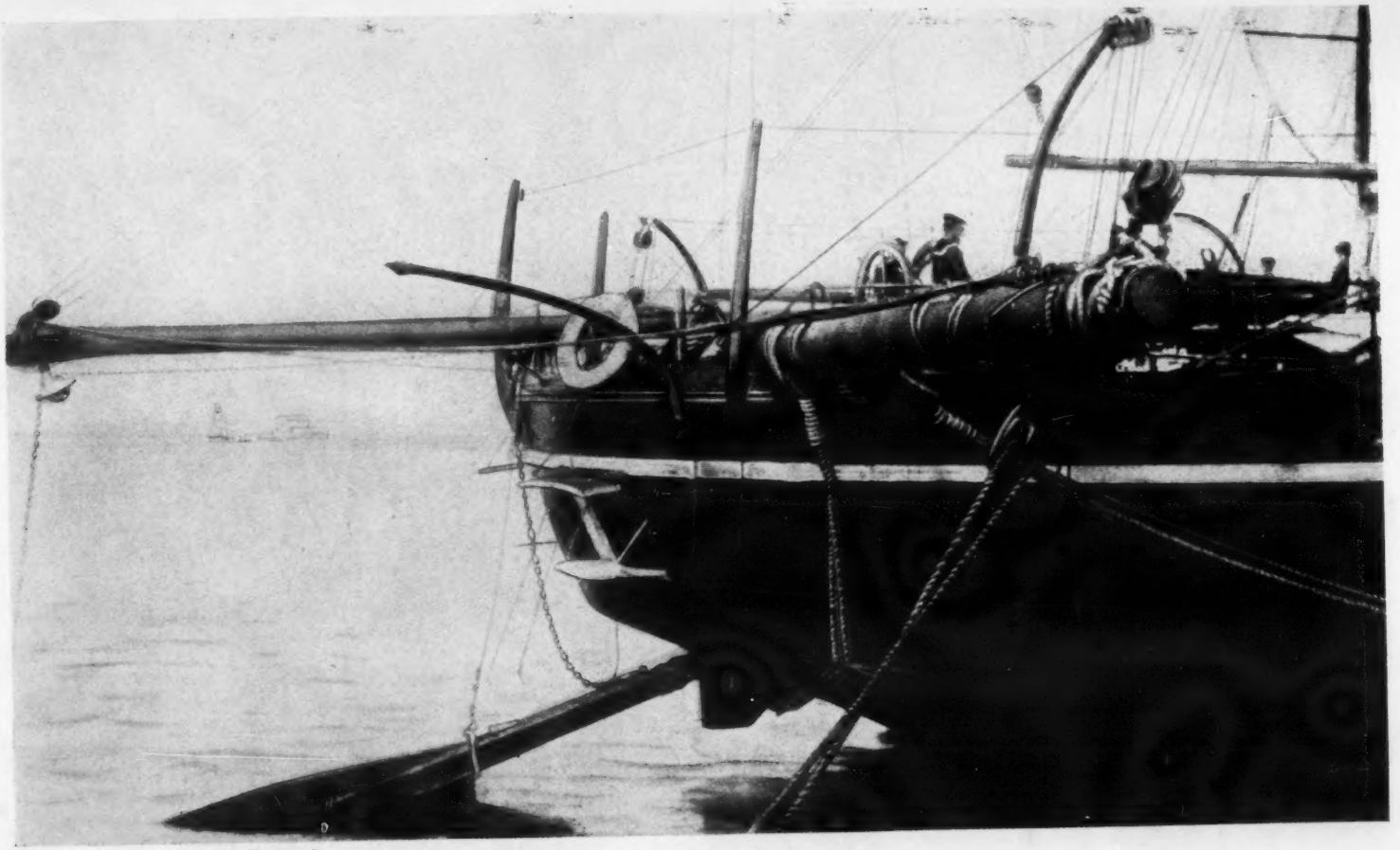
Report of Secretary of the Navy, 1889

U.S.S. "NIPSIC," MARCH, 1889

Her commanding officer, Commander D. W. Mullan, now nearly 85 years of age, resides at Annapolis, Maryland. The ship was deliberately beached on a sandy portion of the harbor to save the lives of the crew and the fate that had befallen the *Vandalia* and the German ships which struck the coral reefs with great loss of life. Rear Admiral Hilary P. Jones, then an ensign and serving in the *Nipsic* as a watch officer, was recommended by his captain in words, which were truly prophetic. See [illegible]

U.S.S. "NIPSIC," MARCH, 1889

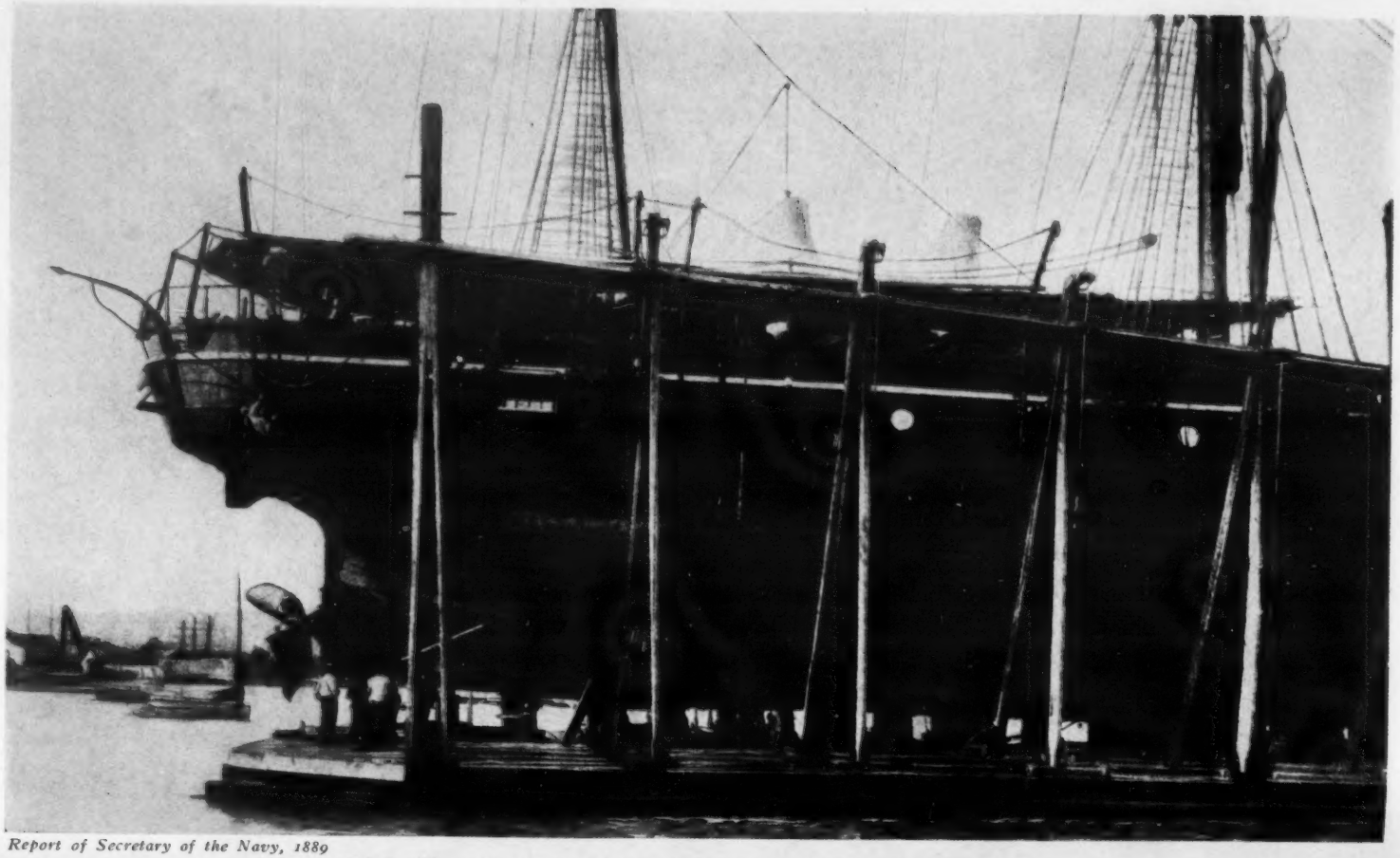
Her commanding officer, Commander D. W. Mullan, now nearly 85 years of age, resides at Annapolis, Maryland. The ship was deliberately beached on a sandy portion of the harbor to save the lives of the crew and the fate that had befallen the *Vandalia* and the German ships which struck the coral reefs with great loss of life. Rear Admiral Hilary P. Jones, then an ensign and serving in the *Nipsic* as a watch officer, was recommended by his captain in words which were truly prophetic. See [illegible]



Report of Secretary of the Navy, 1889

U.S.S. "NIPSIC" SHOWING TEMPORARY JURY RUDDER, MARCH, 1889

Temporarily repaired and gotten off the beach at Apia, Samoa. The ship eventually made Honolulu and after repairs finally reached San Francisco.



Report of Secretary of the Navy, 1889

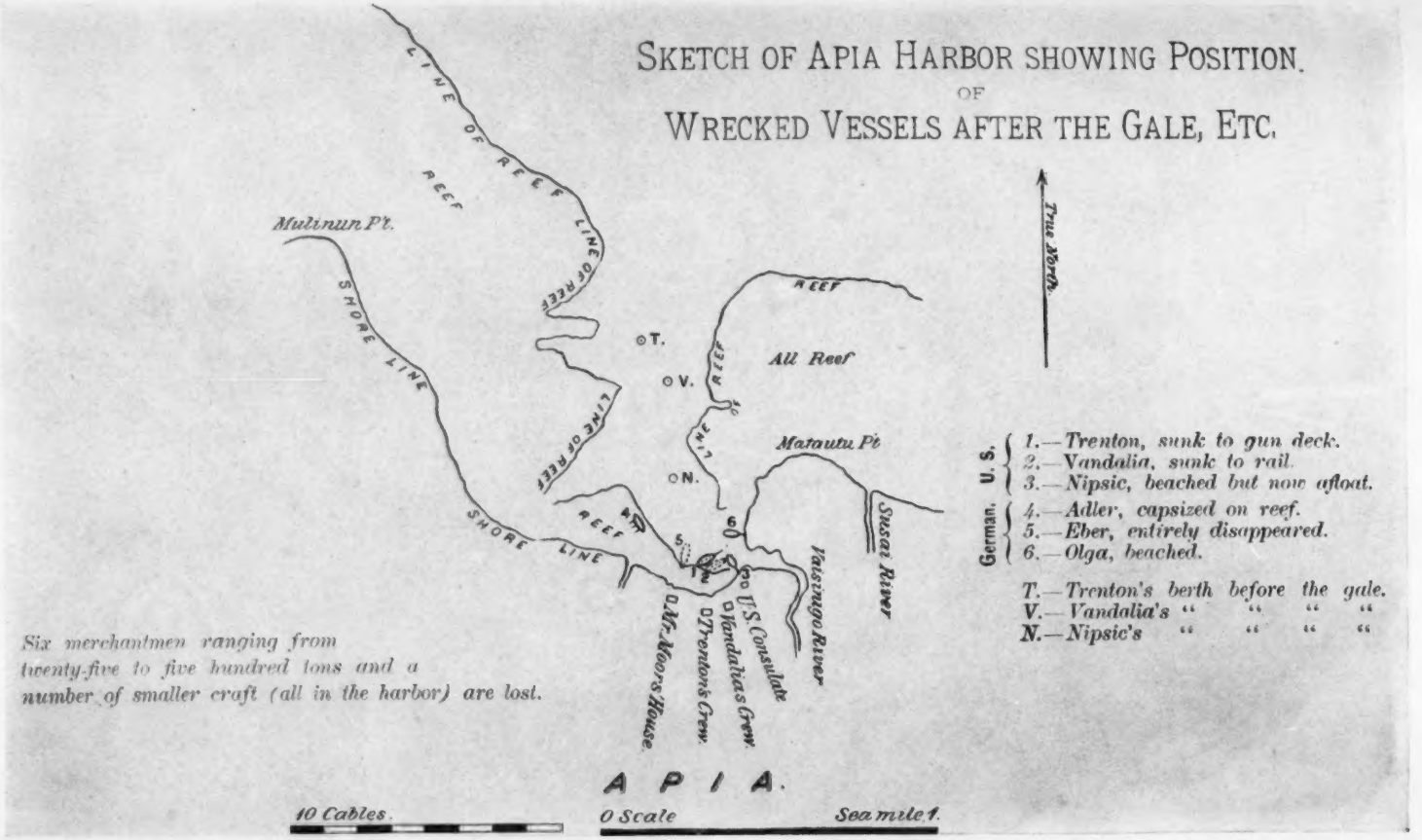
U.S.S. "NIPSIC," ON THE MARINE RAILWAY AT HONOLULU, AUGUST, 1889

She remained here for nine months and then sailed home to San Francisco. See Albert Pierce Taylor's "The Navy in Hawaii," August, 1927.

Report of Secretary of the Navy, 1889

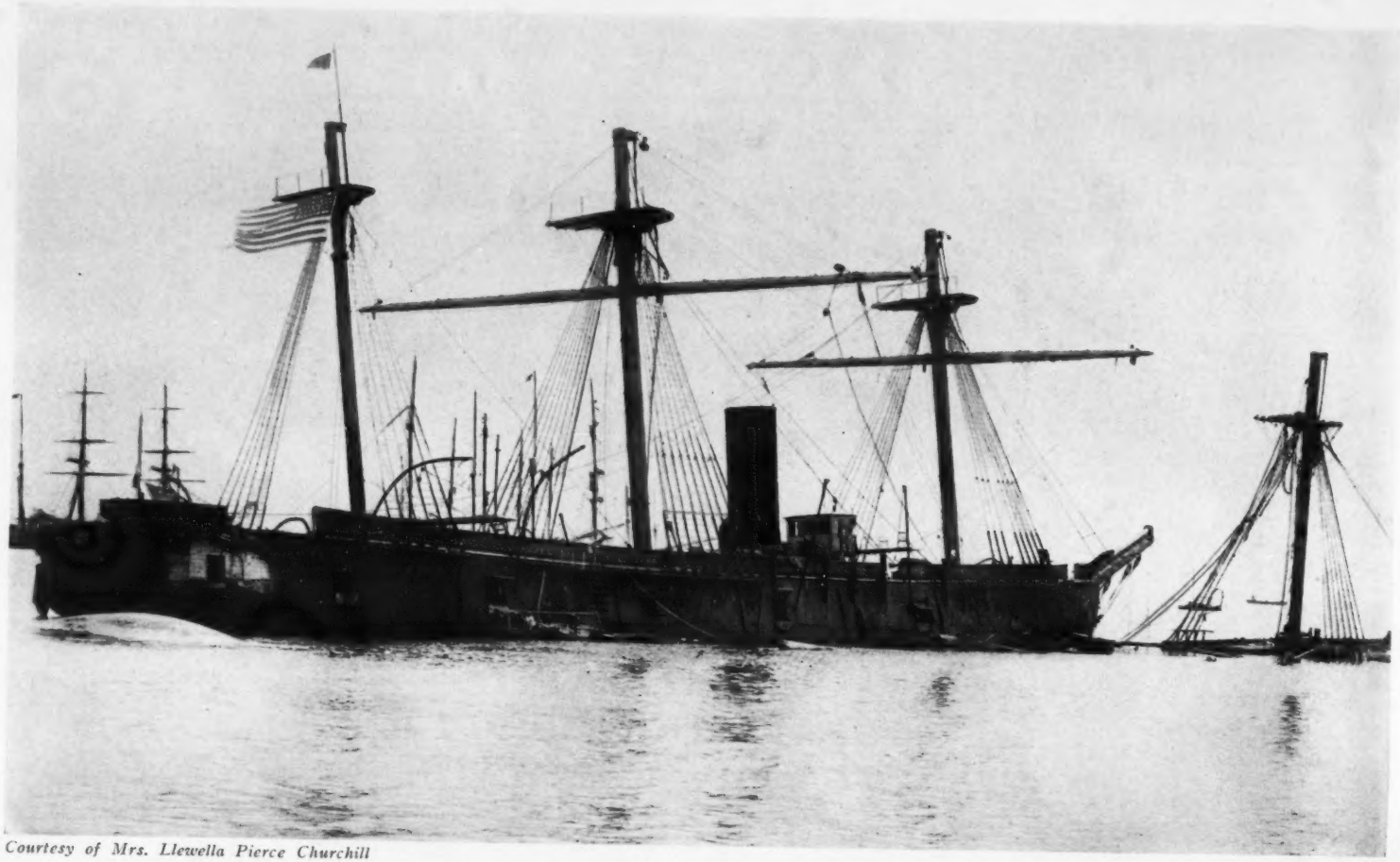
U.S.S. "NIPSIC," ON THE MARINE RAILWAY AT HONOLULU, AUGUST, 1889

She remained here for nine months and then sailed home to San Francisco. See Albert Pierce Taylor's "The Navy in Hawaii," August, 1927.



Report of Secretary of the Navy, 1889

The harbor is not landlocked as the chart shows and is exposed to wind and wave from northwest to southeast. Robert Louis Stevenson lived two miles from Apia. His account of the hurricane-swept harbor in "A Footnote to History" is grippingly interesting.



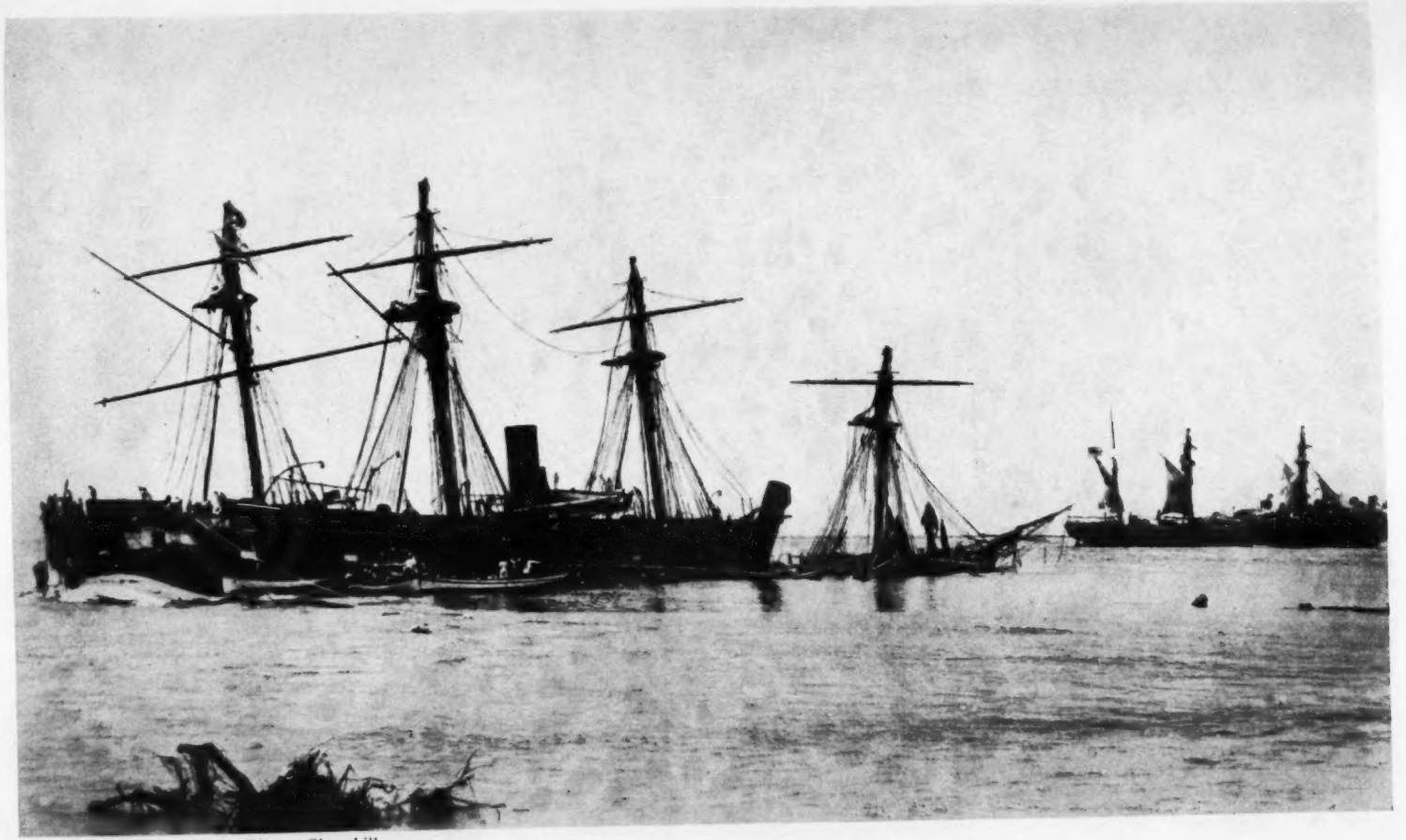
Courtesy of Mrs. Llewella Pierce Churchill

U.S.S. "TRENTON" ASHORE ALONGSIDE THE "VANDALIA," 17 MARCH, 1889. THE SURVIVORS OF THE "VANDALIA" ESCAPED BY BOARDING THE "TRENTON"

This illustration, the four succeeding ones and the one on page xx, are reproduced from a collection of nine photographs presented by Mrs. Churchill to the United States Naval Academy. See Secretary's Notes, pages 1045-1046.

U.S.S. "TRENTON" ASHORE ALONGSIDE THE "VANDALIA," 17 MARCH, 1889. THE SURVIVORS OF THE "VANDALIA" ESCAPED BY BOARDING THE "TRENTON"

This illustration, the four succeeding ones and the one on page XX, are reproduced from a collection of nine photographs presented by Mrs. Churchill to the United States Naval Academy. See Secretary's Notes, pages 1045-1046.



Courtesy of Mrs. Llewella Pierce Churchill

LEFT TO RIGHT: U.S.S. "TRENTON" AND "VANDALIA" AND S.M.S. "OLGA"
As they lay in Apia Harbor on the morning after the disastrous hurricane of 1889.

Courtesy of Mrs. Llewella Pierce Churchill

LEFT TO RIGHT: S.M.S. "EBER" AND "ADLER" AND U.S.S. "TRENTON." BLOWN ASHORE IN APIA HARBOR, ISLAND OF UPOLU, BY THE HURRICANE WHICH SWEPT OVER THAT PORT MARCH 16, 1889. ALL OF THE "EBER'S" CREW EXCEPT TWO WERE LOST.

LEFT TO RIGHT: S.M.S. "EBER" AND "ADLER" AND U.S.S. "TRENTON." BLOWN ASHORE IN APIA HARBOR, ISLAND OF UPOLU, BY THE HURRICANE WHICH SWEPT OVER THAT PORT MARCH 16, 1889. ALL OF THE "EBER'S" CREW EXCEPT TWO WERE LOST.

Courtesy of Mrs. Llewella Pierce Churchill

S.M.S. "ADLER" ASHORE IN APIA HARBOR. THE "ADLER" WENT ASHORE AFTER COLLIDING WITH U.S.S. "TRENTON" AND "NIPSIC" AND H.M.S. "CALLIOPE."

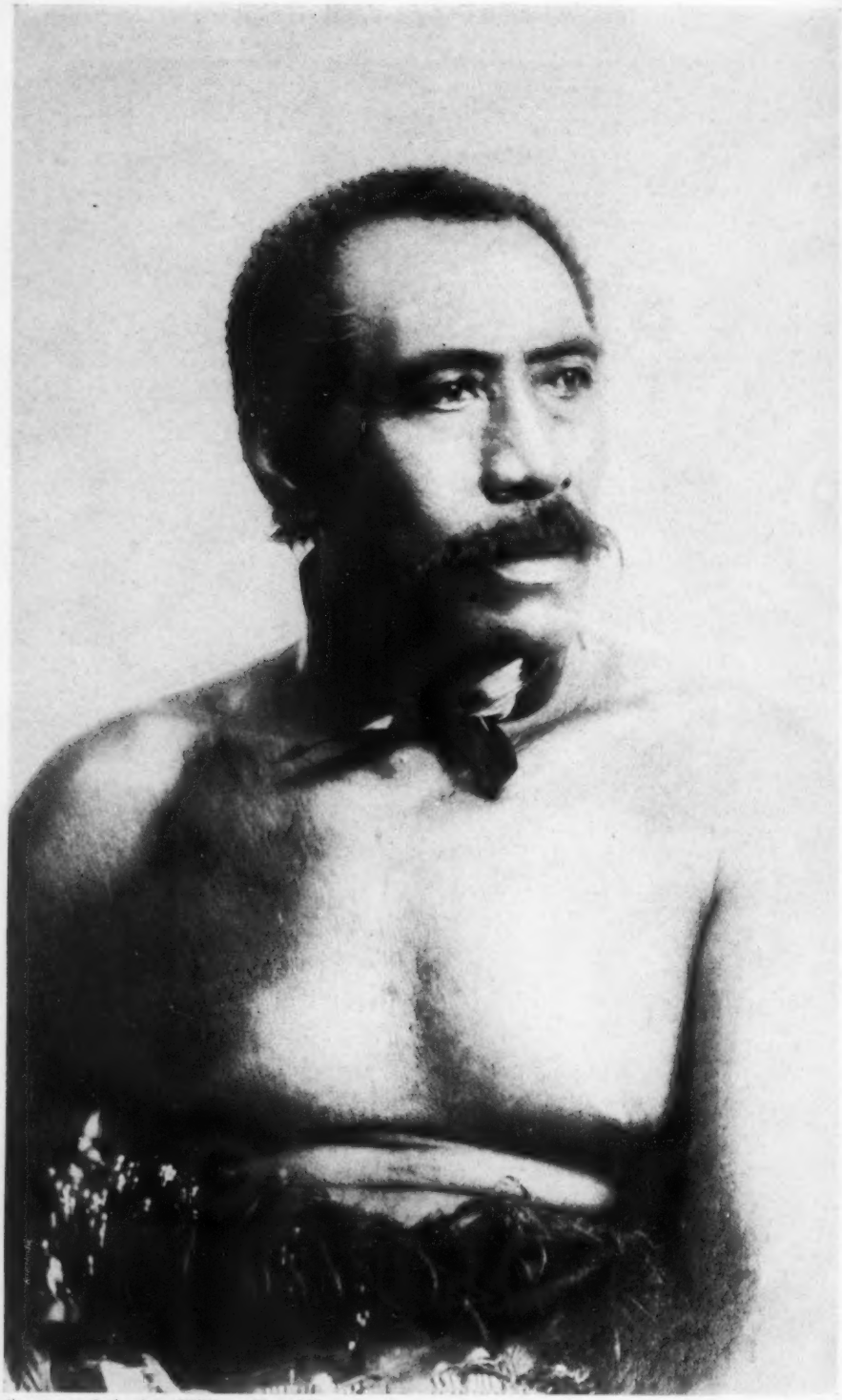
Courtesy of Mrs. Llewella Pierce Churchill

SALVAGE OPERATIONS ON S.M.S. "ADLER"

Underwood and Underwood

"VALIMA," IN SAMOA, WHERE ROBERT LOUIS STEVENSON LIVED AND WROTE, AND WAS BURIED, NOW HOME OF THE BRITISH GOVERNOR

Since New Zealand took over the German group of Samoa, the Governor is living in this historic residence near Apia, once the home of Stevenson, where he wrote his famous Valima letters. He lies buried on the top of the hill at the right. His description of the hurricane is classic.



Courtesy of the late William Churchill

SEUMANUTAFA—CHIEF OF APIA, SAMOA, IN 1889

It was this brave chief who at the risk of his life saved many American lives during the hurricane. See page 1043 and notes on page XXV.

Courtesy of the late William Churchill

FA'ATULIA—WIFE OF THE SAMOAN CHIEF OF APIA, SEUMANUTAFA
She assisted and administered to the survivors of our wrecked ships after they had been brought on shore by the human chain headed by her husband.

Courtesy of Mrs. Llewella Pierce Churchill

PAGO PAGO HARBOR—THE BEST HARBOR IN THE SOUTH SEAS

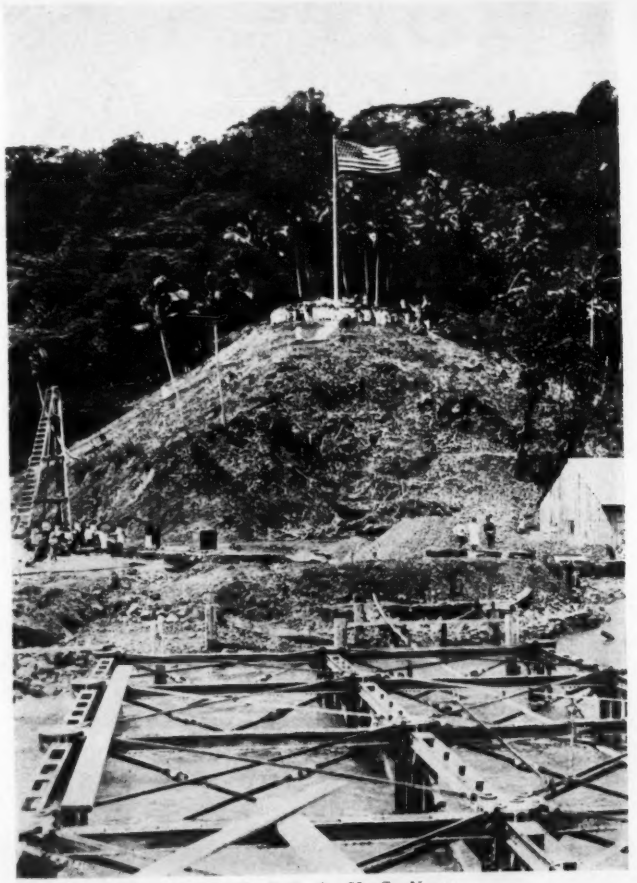
Site of the American Coaling Station on the Island of Tutuila. This island and the Island of Manu'a were obtained by the United States in 1899 by virtue of a tripartite agreement with Great Britain and Germany.

PAGO PAGO HARBOR—THE BEST HARBOR IN THE SOUTH SEAS

Site of the American Coaling Station on the Island of Tutuila. This island and the Island of Manu'a were obtained by the United States in 1899 by virtue of a tripartite agreement with Great Britain and Germany.

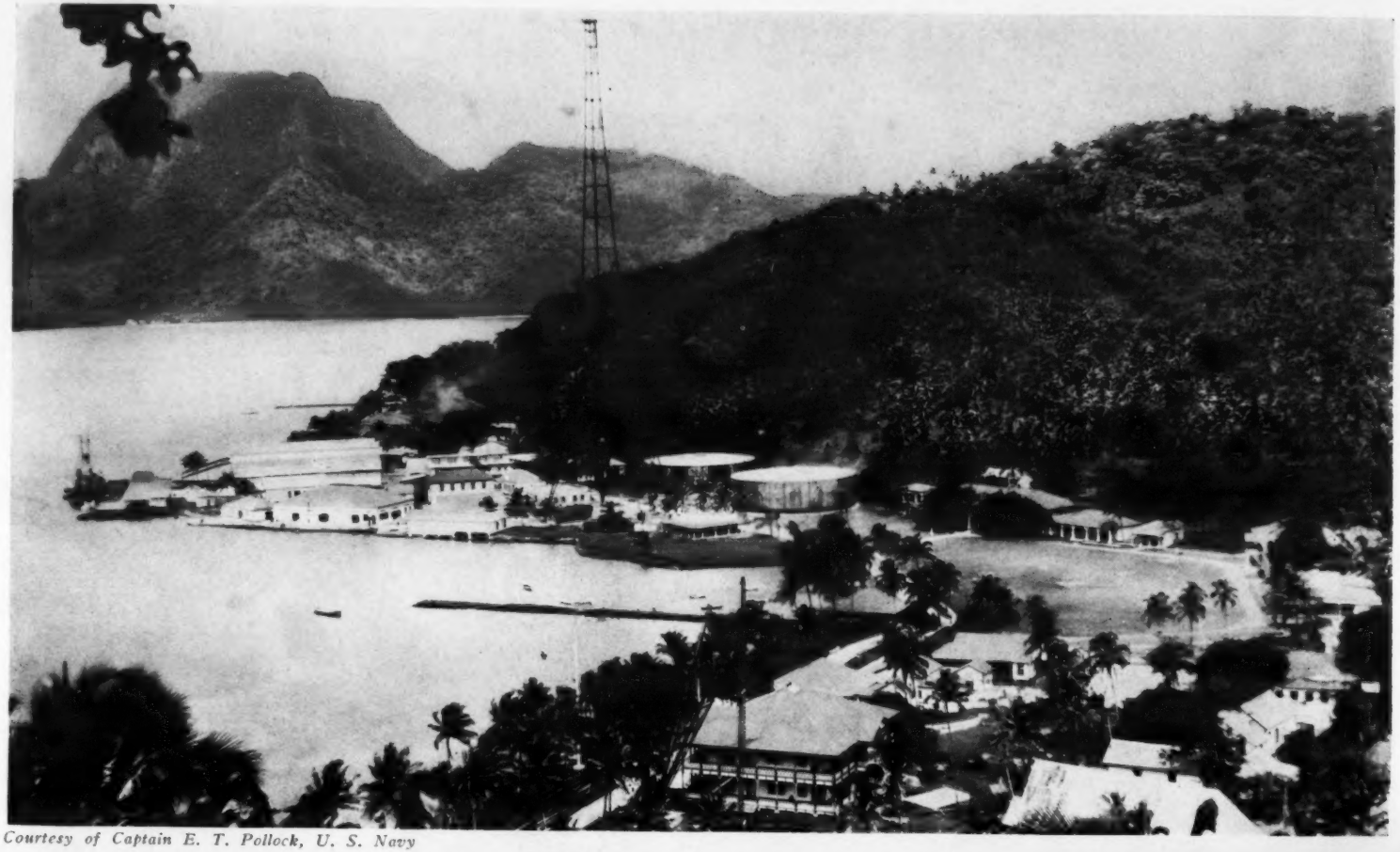
Courtesy of Captain E. T. Pollock, U. S. Navy

QUARANTINE STATION, TUTUILA, AND MT. PIOA, THE "RAINMAKER"



Courtesy of Captain E. T. Pollock, U. S. Navy

THE AMERICAN COLORS HOISTED OVER ISLAND OF TUTUILA APRIL 17, 1900, BY COMMANDER B. F. TILLEY, U.S.N.

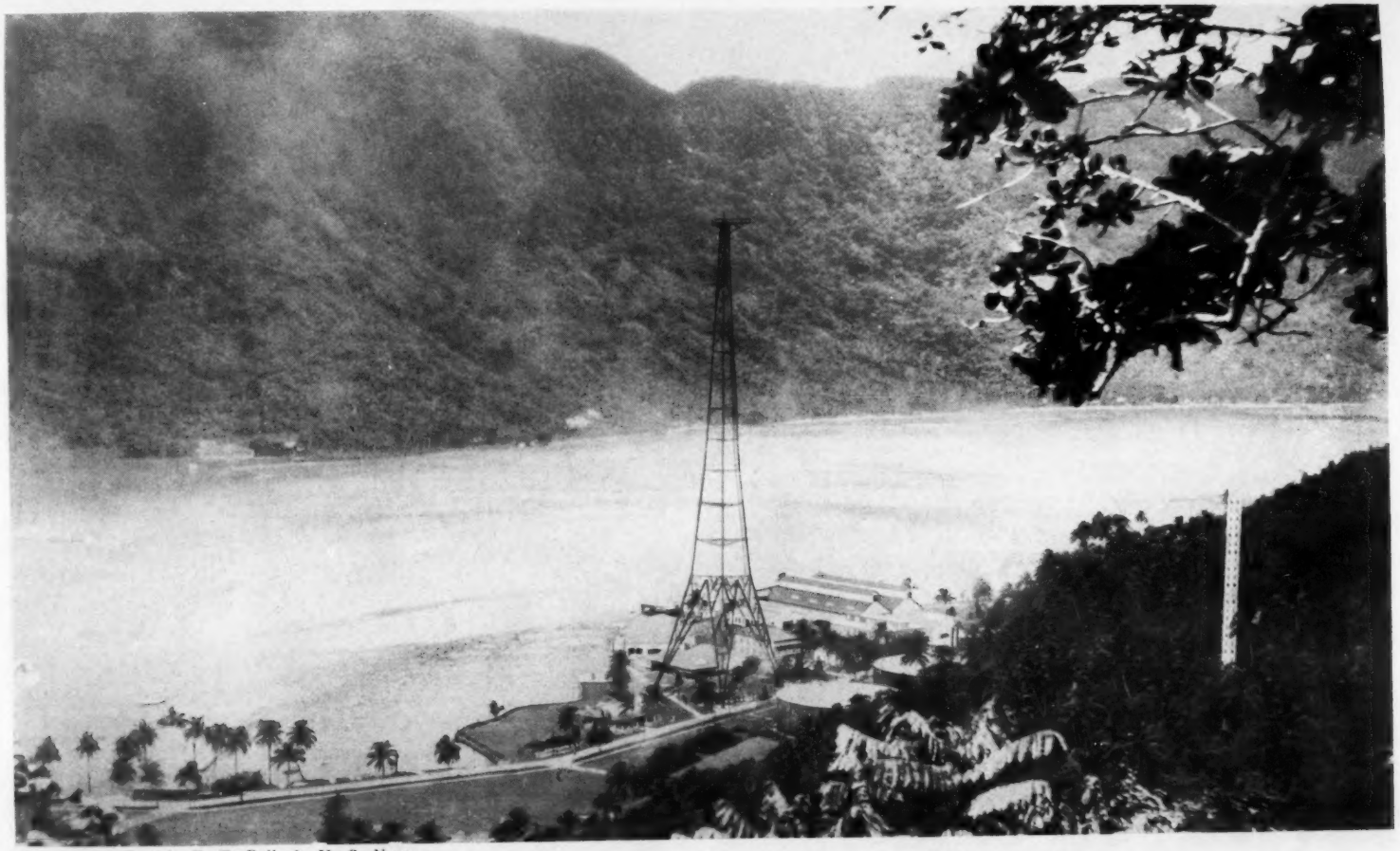


Courtesy of Captain E. T. Pollock, U. S. Navy

VIEW OF U. S. NAVAL STATION, AMERICAN SAMOA

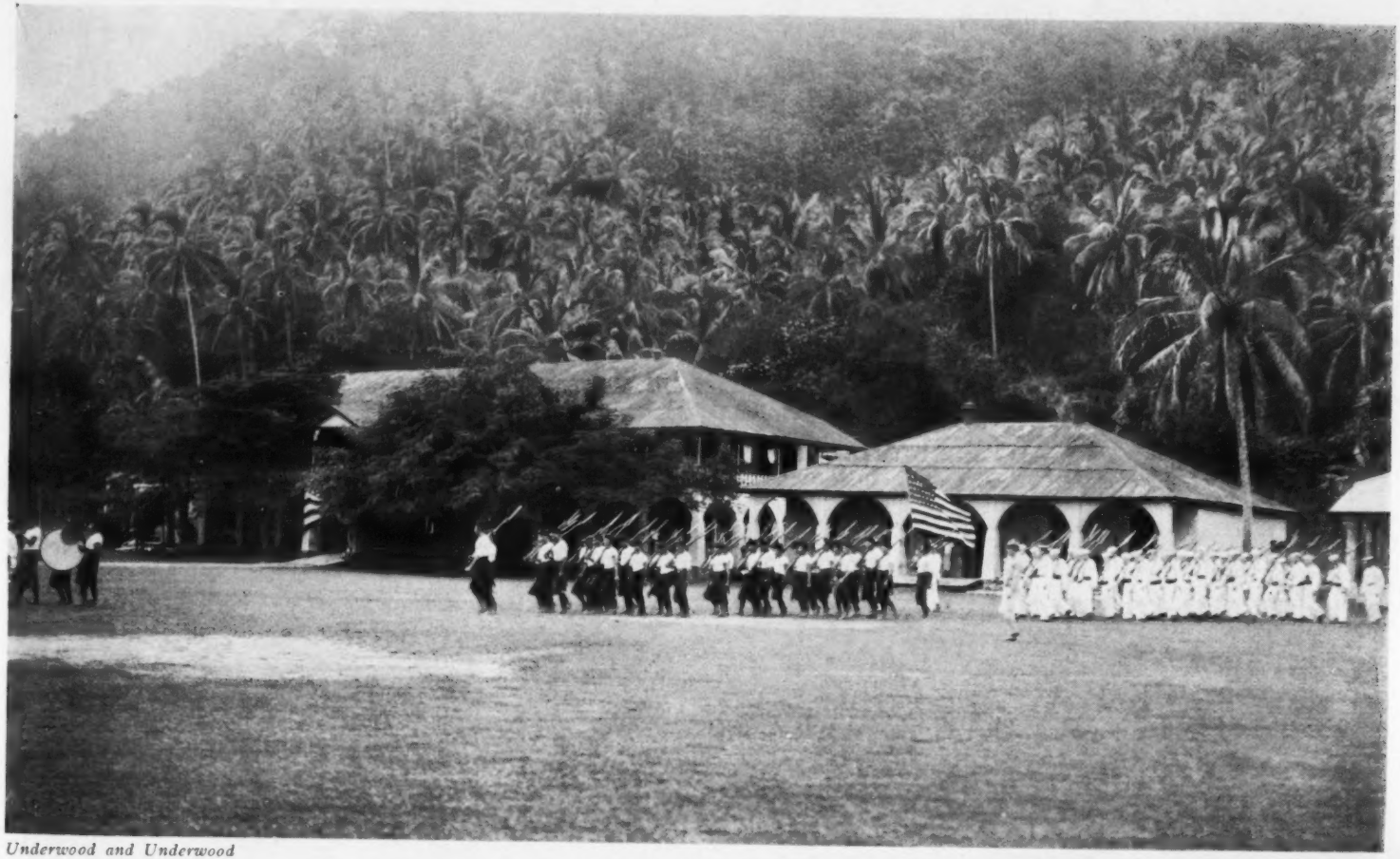
Courtesy of Captain E. T. Pollock, U. S. Navy

VIEW OF U. S. NAVAL STATION, AMERICAN SAMOA



Courtesy of Captain E. T. Pollock, U. S. Navy

ANOTHER VIEW OF THE U. S. NAVAL STATION, TUTUILA, AND PAGO PAGO BAY



Underwood and Underwood

U. S. Naval Station, at Pago Pago
"Fita Fita," or native soldiers, and our American sailors on drill

U. S. Naval Station, at Pago Pago
"Fita Fita," or native soldiers, and our American sailors on drill

Courtesy of Captain E. T. Pollock, U. S. Navy

Salute to the Colors by Fita Fita Guard

The Samoans make fine appearing soldiers and "are the most perfect type of Polynesians, of a light brown color, splendid physique, and handsome features, with an average height of 5 ft. 10 in. They are famous as sailors and boat builders." Note the fine faces, pages xviii and xix.

Courtesy of Captain E. T. Pollock, U. S. Navy

THREE FULL BLOODED NATIVES IN HOLIDAY (NATIVE) GARB. AMERICAN SAMOA

Courtesy of Captain E. T. Pollock, U. S. Navy

THREE FULL BLOODED NATIVES IN HOLIDAY (NATIVE) GARB. AMERICAN SAMOA

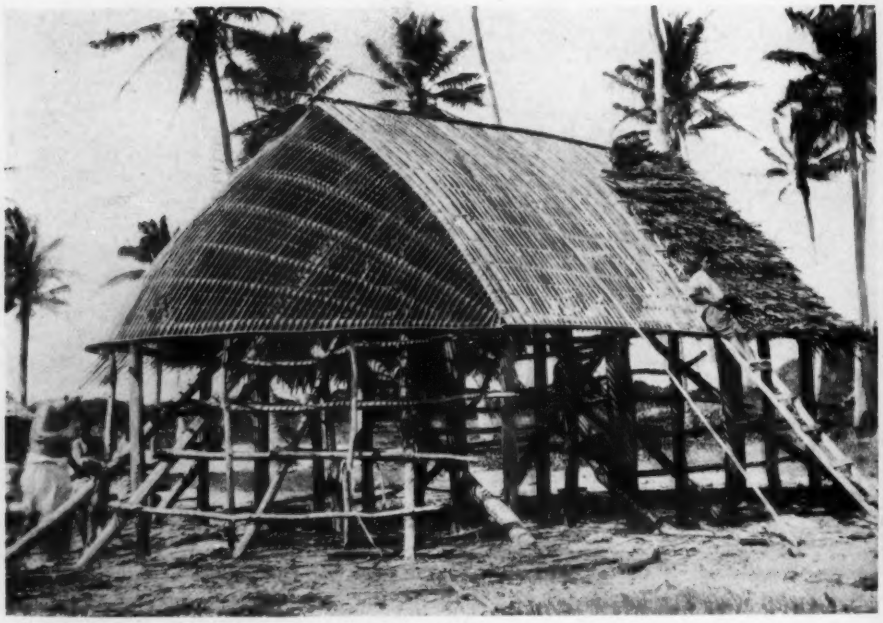
Underwood and Underwood

SAMOANS ADOPT NEW METHOD OF TRANSPORTATION—BICYCLE

Samoans are accepting the western mode of transportation—though not Twentieth Century—the bicycle.

Courtesy of Captain E. T. Pollock, U. S. Navy

MAIN STREET, VILLAGE OF TA'U, AMERICAN SAMOA



Courtesy of Captain E. T. Pollock, U. S. Navy

HOUSE BUILDING, AMERICAN SAMOA

Courtesy of Captain E. T. Pollock, U. S. Navy

A Most Historic Gathering in Manu'a, American Samoa

All the high native officials and the officials from the U. S. Naval Station, together for the first time, June 5, 1922. The previous gathering of all the native officials took place hundreds of years ago.

Courtesy of Captain E. T. Pollock, U. S. Navy

A Native Feast in Honor of the Governor of American Samoa at Pago Pago
(Editor's Note: The Governor and his wife are seated at the far end of the "table.")

Courtesy of Captain E. T. Pollock, U. S. Navy

A Group in American Samoa

Left to right: County Chief Misa of Ofu; The Governor's wife; Fapia, wife of the District Governor Magua; Lieut. Metters, U. S. Navy: his wife; an officer's mother; Mauga, the District Governor, one of the signers of the cession of Tutuila in 1900.

Underwood and Underwood

CRATER LAKE, LANUTOO NEAR APIA, SAMOA

The beautiful scenery is said to have been th inspiration for many of the works of Robert Louis Stevenson, the latter spoken of by the Samoans as "Tusitala"—teller of tales.

UNITED STATES
NAVAL INSTITUTE
PROCEEDINGS

Vol. No. 53, No. 9 SEPTEMBER, 1927 *Whole No. 295*

The Naval War College

An Outline of the Past and Description of the Present

By REAR ADMIRAL W. V. PRATT, *U. S. Navy*
President Naval War College

I. THE ORIGINAL CONCEPTION

IN ORDER to give a clear idea of the work of the Naval War College, of its past and present accomplishments and its hopes for the future, it will be necessary to make a cursory survey of the situation from the date of the original conception of the institution. In making this review the liberty has been taken of using the data furnished in the *Life and Letters of Rear Admiral Stephen B. Luce, U.S.N.*, written by Rear Admiral Albert Gleaves, U. S. Navy, and of quoting frequently directly from that book.

Early Suggestions of Luce

In writing to the Secretary of the Navy from the U.S.S. *Hartford* in August of 1877, Rear Admiral, then Captain, Luce advocated the establishment of a school wherein our junior officers would be carried through a post-graduate course consisting of higher branches of their profession. The leading feature of the post-graduate course was to be the carrying of the young officers through a course of instruction in the art of war. Admiral Luce further suggested as a preliminary step the sending of a select few of our officers to attend a course of instruction at the Artillery School at Fort Monroe. While the purpose of this detail was to prepare naval officers to become instructors at the naval school, nevertheless it should be noted that the bringing together of officers of the two services bent upon learning the fundamentals of their professions would assuredly result in a degree of coöperation between them, and would, in effect, pave the way for the joint consideration of military problems, a matter which today is accepted as essential. It is well to note here that the mission of the new naval school was outlined tersely by Admiral Luce in the words, "Instruction in the art of war."

In October of 1877, Brigadier General Emory Upton in writing to Admiral Luce approved of the latter's project to establish the naval school as a worthy one, as he says, "Someone must start the scheme, and I sincerely hope that as you have done so, you may be able to inaugurate the course and witness its triumph."

Suggested to the Naval Institute

In 1883, lecturing before the Naval Institute, Commodore Luce suggested "the establishment of a post-graduate course for the study of the science of war, the object of which would be to prepare officers for the great business of their lives, namely, the practical operation of war." . . . . "In addition to the study of war, he recommended a higher course in ordnance, a course in international law, the higher mathematics, lan-

guages, astronomy, and hydrography. While his efforts commanded respectful attention, they did not excite much enthusiasm or even interest on the subject."

A Board Appointed

As a result of his efforts, in 1884 Secretary Chandler appointed a board, of which Luce was president, to report and consider the whole subject of a post-graduate course or school of application to be established by the Department for officers of the Navy. In June of 1884, the Board submitted an exhaustive report. The decisions of this Board were so important and to this day outline so clearly the goal toward which the Naval War College should strive that the liberty is taken of quoting in full certain of its opinions:

> Campaigns that have depended for success upon the coöperation of a fleet; campaigns that hav been frustrated through the interposition of a fleet; the transfer, by water, of a numerous army to distant points and their landing on enemy's coast under the guns of a fleet; the various results of engagements between ships and shore batteries; naval expeditions which have ended in disaster that could have been foretold through an intelligent study of the problem beforehand; and the great naval battles of history, even from the earliest times, which illustrate and enforce many of the most important and immutable principles of war, should be carefully examined and rendered familiar to the naval student. For it is upon this professional skill in the large operation of combining and utilizing to the best advantage, the floating force of the country, as well as in the more restricted one of an isolated command, that our people must rely for the protection of their interests and the guarding of their extensive coasts and coasting trade from the depredations of an enemy. . . . .
>
> Naval officers are often called upon on foreign stations to exercise diplomatic functions, and are, not infrequently, required to settle or act upon questions involving nice points of international law. They should therefore, be carefully prepared for this responsibility by an intimate knowledge of the enlightened neutrality policy which this country has had the honor of introducing and maintaining from the foundation, and of the principles of equity that have ever characterized, as well as of the instruments which control, the intercourse of the United States with foreign powers.

First Mission of the College

It is well to study these statements for in reality they indicate the mission of the Naval War College. From time to time, other and more terse missions have been assigned, but nowhere will there be found a more comprehensive view of what the College should mean to the Navy and to the country than in the two paragraphs above. The methods we adopt to perfect ourselves in the carrying out of the above missions may change, but the fundamentals enunciated stand proved through time.

The College Established—1884

As a result of this report, an order was issued by the Navy Department in 1884 establishing a College for an advanced course of professional study for naval officers, to be known as the Naval War College. In 1885, the Naval War College was founded at Newport, Rhode Island, and Admiral Luce was made the first president.

Its Early Vicissitudes

Even though the College was established it passed through many vicissitudes before its importance was recognized. The first class consisted of eight student officers assembled for a course of one month. In 1886, 1887, and 1888 during the presidency of Captain Mahan, there were classes of about twenty officers each year for courses of from two and one-half to three months. In 1889, an order was issued transferring the War College from Coasters' Island to the Naval Torpedo Station on Goat Island and a consolidation of the two efforts, one production of material, the other, study, was attempted. This was disastrous and had it been persisted in, the future of the War College, in all probability, would have been doomed. In 1890 and 1891 there were no War College courses. In 1892, with Mahan again as president, the class was renewed, but in 1893 no class was ordered. The War College had many enemies at the Department who believed conscientiously that it should not exist as a separate institution. However, the present War College Building was completed in 1892 and during the period 1894-1896 the College seemed to have confirmed its value and importance and apparently was firmly established. Even then there were officers who believed it would be wiser to transfer the College to Annapolis and make it an adjunct to the course there. Fortunately this opinion did not prevail. In 1899 there was no class assembled at the War College. From time to time after 1900 the idea cropped up that it would be wise to transfer the Naval War College to Washington. The genesis of this idea lay probably in the fact that by being at Washington the

College would serve a dual purpose, that is, it would be a school for study and might also be part of the organization of the Navy Department, particularly in matters pertaining to advice and planning. In this proposal, the original purpose of the College, as outlined by the Board which recommended its establishment, was lost sight of. The organization of the Department at this time was in itself so incomplete (the Office of Operations not having been established) that a need was felt to utilize the work of the War College in an administrative way. The immense advantage, however, of having the College in a place where through personal contact it could effect coöperation with the fleet was entirely lost sight of by those who advocated the transfer.

Luce—Mahan—Little

During the first twenty-five years of the College's existence, the names of three men stand out above all others. They have given it an indelible stamp. They are Admiral Luce, who gave the College life and established its mission: Captain Mahan, whose works on *Sea Power* brought it fame, and Captain McCarthy Little, whose untiring devotion kept the spirit of the College alive during its most trying days.

2. THE COLLEGE JUST PREVIOUS TO THE WORLD WAR

Even as late as fifteen years ago, just prior to the World War, while the College was recognized as a valuable asset to the naval establishment, its full importance was not appreciated. The College was tolerated but it was not looked upon as being one of the most essential features of the Navy.

New Methods Inaugurated

About 1910, during the administration of Rear Admiral R. P. Rodgers, a change in the method of instruction was inaugurated. The scope of the problem work was increased and the method of instruction was definitely based upon a practical and competitive system, similar to the case system used at some schools but further embodying the competitive feature. This resulted from a study of the German method of the solution of a problem, which consists of a derivation of the mission, an estimate of the situation following an ordered course of reasoning, the arrival at a concrete decision and the translation of that decision into action through a concise order. This marked the beginning of the present method of instruction in the "Art of War."

Methods Increasingly Progressive

From this time the internal work of the College was increasingly progressive. The work inauguarated under Rear Admiral R. P. Rodgers was carried on and expanded under Captain W. L. Rodgers, and Rear Admiral Austin M. Knight. The external relationships existing between the College and the rest of the naval service, however, were not so satisfactory. Even in its internal work, the College had not reached the point where it was able to take up in detailed study the partnership existing between the two military establishments, or the coördination demanded between the military establishments and the other branches of the Government, or the relationship of the combined executive departments to the national resources of the entire country. In fact, it took the World War to clarify our thoughts and extend our vision in this direction.

College Given Additional Missions

During the period now spoken of, while much advance was made in the internal development of the College, nevertheless, the mission of the College as outlined in the Board's report sometimes was lost sight of. Perhaps, better it might be said the time had not yet arrived, where the College was in a position to undertake the work which at times the Department placed upon it. To illustrate: the course at the Naval War College during this period partook of the following characteristics. There was given opportunity for study; the solution of naval problems under the applicatory and competitive system went on, but in addition from time to time the Department, due to its faulty organization or rather lack of organization, in that most essential feature, a fully developed office of operations, occasionally threw upon the College work which properly belongs to a War Plans Division. Had the College been assigned the task of testing plans already made, this would have been another matter and a legitimate function, but there being no War Plans Division, the College frequently was forced to make plans and to test them in addition to its work of

education and this was not practicable as the College was then organized. Further, the great importance of conducting studies of joint operations through the problem solving method in connection with the Army was not fully realized. This is somewhat strange for if the original report will be referred to, it must be noted there that the necessity for a study of joint operations is stressed. Howbeit, the work of the College had produced such good results that at the opening of the World War there was a small body of naval men who were more competent to face the complex situations confronting them, than if the College had never existed. In fact, no less a person than the Chief of Naval Operations during the World War, Admiral Benson, although not a graduate of the College, has often expressed his appreciation of the work performed by graduates and he himself was careful, insofar as he was able to do it, to place in positions of major responsibility those officers who had received the benefits of a War College training.

Period of Our Neutrality

During the first two and a half years of the World War the College continued its courses and had the opportunity for studying the conduct of war from the point of view of a neutral. This period proved of value to the College in enabling it to formulate more definitely its ideas on war and particularly in extending its vision. Although this period was one of importance to the War College, it was of even more value to the Navy Department.

Functions of Office of Operations, General Board and War College

In May of 1915, Admiral Benson was selected to be Chief of Naval Operations and with his appointment the Office of Operations, corresponding to that of the General Staff of the Army, came into existence on a practical basis. Formerly this work had been done through an aide for operations but the labor falling upon the shoulders of one man was so great that he could, for all practical purposes, serve only as an adviser. The details which logically must fall to the lot of an Office of Operations were so numerous that one aide could do little more than to act in an advisory capacity. An Advisory Board was already in existence in the General Board. This defect in the Departmental system was bound, in the course of time, to lead not only to a clash of opinion between the advisory functions of the Navy but also failed to demark the lines of cleavage which should exist between the administrative function, the advisory function, the planning function and the study of the problems of war. There resulted a confusion of ideas as to the proper spheres of action of the Office of Operations, the General Board and the War College.

With the establishment of the Office of Operations on a correct, though limited, footing, the proper functions of the three major shore organizations of the naval establishment became more clearly outlined. The first result was felt immediately at the War College. The character and scope of its work at once took on more definite shape. The same cannot be said of the relations which existed at this time between the General Board and the Office of Operations. A true appreciation of the partnership which should unite these two bodies did not come until some time later. In fact, it may be said to be a development of the World War.

College Closed by War

Upon our entry into the War, the College closed and did not reopen until fully six months after the Armistice was signed. In the meantime, however, an understanding of the proper purpose of the College had been definitely reached by students of military and world affairs. During the time of our participation in the War, as was natural, the Office of Operations received a great impetus and was able to develop along logical and proper lines. The General Board now, instead of reaching out to take unto itself administrative functions, reverted to its original conception, that of a purely advisory body. These results were to have an enduring influence upon the War College when it was again reestablished at the close of the War. By this time the place and function of the executive and administrative factors, the plan making factor and the advisory factor were better understood and had been more definitely fixed.

3. THE PERIOD IMMEDIATELY FOLLOWING THE WAR

After the war, under the able administration of Admiral Sims, who played a most distinguished rôle during the struggle, the

College was reopened. It began its new life with an increased vigor. The lessons of the war were fresh in the minds of all; the value of the College had been demonstrated and there existed now a definite desire on the part of most officers to take advantage of the course of study offered to them. This desire was increased by departmental orders which indicated that the higher commands, so far as it might be practicable, should go only to those who had received the benefits of War College training. Instead of a paltry few officers taking the course, as had been the case formerly, the classes now increased in size and the staff of the College was augmented correspondingly. During his entire administration Secretary Daniels was an ardent advocate of the War College.

Further Expansion

About two or three years ago, under the impetus of Assistant Secretary Roosevelt, the field of the College work was expanded further. Previous to this time there had been only one class. Following the lead indicated by Colonel Roosevelt, the scope of the work of the College was enlarged to include two classes, a senior and a junior class, and the correspondence course initiated by Secretary Daniels in 1914 and again re-established in 1919 (to be taken by any officer in the Navy) was continued. Arrangement was made also for an additional and higher course to be established at the War College when the time should be ripe to accomplish this. The latter step has not yet been taken.

Present Scope of Work

Since the increase in the scope of work, pursuant to the movement inaugurated by Secretary Roosevelt and up to 1926, the internal assignments of the College have been as follows:

(*a*) A correspondence course dealing in the elementary study of tactics and international law;

(*b*) A junior course, established to fit younger officers for staff duties, dealing in problems of tactics and minor strategy;

(*c*) A senior class undertaking more extensive tactical and strategical problems.

International Law

The study of international law, which has been carried on since the time of the first founding of the College, was continued, but the output was not as great as it had been in earlier periods of the College history. Lectures on international relations were frequently given but a division for the study of international affairs had never been created and there was not the sound, official and correct background of national policy upon which to base our more technical naval studies.

Logistics

Two other fields of work essential for an understanding of our country's military needs were undeveloped. The first field of endeavor lay in the development of a course in logistics which should link up strategical and tactical movements to matters of personnel, material, supply and transport, and the further linking up of this logistic course to national resource in general, in the effort to determine the relationship which must exist, in war, between national resource and naval operations.

Relations with Army War College

The second line of effort lay in hooking up more closely with the Army War College in the matter of joint operations, from which the study of war operations on a major scale naturally results, leading ultimately to closer coöperation between the College, the Joint Board and the plan making organizations. It is true that an appreciation of the need for study and problem work in these two fields has been recognized, for in the last few years several joint problems have been played by the Army and Naval War Colleges working together, and a good lecture course had been established where authorities on their own subjects talked to the student officers, but an appreciation of the necessity for greater study and problem work along the lines just indicated did not exist at the Naval War College to the degree that it should. This was natural under the system of organization existing at the War College up to 1926 and the somewhat immature character of many of the officers attending the College courses. Too much thought was spent upon the separate departments of tactics and strategy and too little attention was paid to the fact that strategy and tactics are not separate fields of activity but both merge under the head of operations, and that operations, even purely naval, cannot hope to succeed unless careful attention is paid to material, personnel and the thousand de-

tailed difficulties attendant upon war. Until a proper appreciation exists of the intimate relationship between the purely naval operation and its attendant activities, there is little hope that a full perception will be had of the immense scope of activities necessitated by a broad plan of campaign involving both military services, and the country as a whole.

An Inadequate Statement of the Mission of College

To illustrate more clearly this point, there is quoted from a statement prepared by the Navy Department relative to the mission of the Naval War College and the policy of the Department relative to the assignment of its graduates to important commands, the following. This statement was prepared for Congress and was dated December 4, 1925. In it the mission of the War College is stated as follows:

> The mission of the War College is to furnish a medium whereby naval officers may in peace time study the conduct of naval warfare and the art of command in relation thereto. The college puts the student through a selective course of reading, lectures, and instruction and by practical naval war games teaches him to apply his acquired knowledge on the game board in solving strategical and tactical problems; starting in an elementary way and working up to major fleet operation. A correspondence course, consisting of selected material, lectures, and problems for solution, serves as a medium of preparing officers in general service for the work of the college or of enabling an officer, who because of his duty has not been to, or is unable to attend, the college, to keep up with the development in strategy and tactics. Any officer may be placed on the War College lecture distribution list at his request and keep abreast of the special lectures or even of the tactical studies or critiques of the tactical games.
>
> In carrying on this work the College naturally has become a research and experimental laboratory for naval strategical and tactical practices.

Mission Broader in Its Scope

The President of the War College must insist that this is not an adequate statement of the mission of the War College, nor is it as broad in its scope as the enunciation of principles laid down by the original Board in 1884, at the time when the College was first to be founded. As has been pointed out in preceding statements, the limited view outlined in this last statement of mission by the Bureau of Navigation would preclude the College from undertaking studies along the broad lines indicated before. The field of international relationships is not touched upon; hints of the studies necessary to fit higher officers to cope with many of the international problems confronting naval men in times of peace are not there; that most important work, the conduct of joint operations in a grand campaign of war, is not even suggested; the testing of war plans prepared by the Department is not spoken of; the coöperation which must exist between the War College and the fleet in the staging and solution of the latter's practical sea problems is not mentioned. Unless all of these features are incorporated into the work of the Naval War College, eventually the College will have failed of its full purpose.

Study of the Art of War and Keeping the Peace

It is true that the College exists for the purpose of studying the art of war. Admiral Luce used these words in his first letter, but he said war and not naval war only. This is its major purpose, but it is true likewise that between wars there are long periods of peace. The mission of the Navy is to know not only how to conduct efficient war in time of war, but, in time of peace, the Navy must know how to keep the peace! Older naval men constantly are confronted with problems of an international character which require of them accurate knowledge, sound judgment and frequently quick decision. While experience stands them in good stead, and while the service rendered by naval men in the past has been excellent, it could be bettered by the opportunity for thoughtful consideration, given at such times as an officer's services could be spared from the details of executive and administrative work. As outlined by the original Board, a knowledge of international law and of international relations is one of the prime duties of a naval officer and nowhere can he find opportunity better to equip himself for these duties than at the War College.

4. The Present Organization and Work of the College

The Organization

An attempt has been made to remedy the above deficiencies. The proper evolution of the War College demands an increase in the scope of the work hitherto assigned and a different arrangement. The World War made the need evident, a need which may be said extends even to the Navy Depart-

ment itself. The College should proceed to adjust itself to meet the increased demands. As a first step, a reorganization of the Naval War College has been effected. This was made after an exhaustive study of the principles of command and administration, with the result that the Naval War College, as it exists today, is organized on lines similar to that of the General Staff of the Army and the office of Naval Operations of the Navy. This does not mean that the War College attempts executive, administrative or advisory work. It means, however, that it will attempt to formulate its problems and conduct its studies with a recognition of the fact that certain deciding factors enter into the composition of every war problem. The six principal elements to be considered are as follows:

(*a*) Personnel, material, supply (logistics);
(*b*) Information and research;
(*c*) Movement and communication;
(*d*) Policy and plan;
(*e*) Inspection and training;
(*f*) Finance and appropriations.

Naturally in the college work where the time is devoted to study, such matters as inspection and finance, except as finance may come under the head of Logistics, play a minor rôle, but matters of personnel, material and supply lumped under the head logistics and such factors as information, operation, plan and policy must be given great weight. In brief, the organization of the War College is now as follows. No longer do we have a department of strategy and another of tactics, but both together form a division called movement, and this operation—movement—is dependent upon other accessory factors such as plan and policy, logistics (which includes personnel, material and supply) and information. Therefore the College is divided into four divisions: Division A is logistics; Division B, information; Division C, movement, communications, training; Division D, policy and plan. The two classes, senior and junior, and the correspondence course fit into this organization, and place is made for the advanced course when the Navy Department sees fit to send the properly qualified officers here, that is those who have graduated from the senior class or who have done staff duty at the college.

It should be noted here that the plan of organization fits the base plan of organization of the Office of Operations, and it can be made to fit in with the organization of the Fleet Staff. In fact, in the playing of each major problem, not only must movement, which absorbs strategy and tactics and which is the prime rôle of the commander after plan and policy are accounted for, be considered, but the other accessory factors must be assigned their proportionate parts. The result is that before the problem can be played competitively, the commander-in-chief must be at pains to organize his staff to handle the operation of the problem logically and efficiently. To this end the organization of the college itself serves as a guide.

It is hoped that through this reorganization more comprehensive studies may be made along lines which would be of practical benefit to the Department in case of trouble, without in any way detracting from the value to the student of the lessons learned through his study of these problems. To sum up concisely, the student under this plan is not made an administrative factor, but he still remains a student, while the scope of his work covers not only the problems of naval strategy and tactics but includes the subjects outlined in the reorganization.

If there was any one fact brought home to the mind with telling effect, from the results of the late war, it was this. No amount of brilliant tactics in the field can compensate for faulty strategical conceptions, and neither military strategy nor tactics will carry through to success unless basic principles well outside the ken of the purely military school be adhered to. Therefore, it was fit that a reorganization to meet future conditions should be effected at the War College, in order that the ideas of the graduates of this institution upon war should be sound, thorough and up to date, and their practice efficient.

The Present Course

The college consists of a staff to instruct and two classes called the senior and junior numbering together about seventy-five officers. Under the present reorganization while in the problem work the junior class still stress tactical work and the senior, strategical, the general scope of the work has been broadened. In the major problem work both classes combine. In addition to the operational features of the problem work the logistic feature is stressed, and no major

problem is completely solved which neglects this important factor. Less attention is paid to individual theses, which have been cut to two, and more time is spent in committee work, studying certain selected features of a campaign, a battle, the source and supply of a raw material, or the matter of a national policy. Each committee arranges its subject so that it can be presented definitely and concisely by its speakers from the platform, and the results of the committee findings are open to discussion. Much work is crowded into the year, perhaps too much. It would be better if certain of the students of the senior class could be selected and pass over into an advanced course for another year, while some of the juniors fleeted up into the senior class. As this has not seemed feasible up to date, the courses have been crowded in order to make the officers themselves realize how many important topics there are, and how many sided is the art of war. No man can leave the College now satisfied that he has learned it all, and able to confound his less fortunate brother officer with the wise statement, "This is doctrine," in the name of which many errors have been committed.

International Law and Lectures

The study of international law and the lecture course form a regular part of the curriculum of the College and fit nicely into Division D, the policy and plans division, and Division A, the logistics division.

International Law

International law is of course a most important study for naval men to pursue. Fortunately in the past we have had the services of one of the foremost international lawyers in the country, George Grafton Wilson, of Harvard. As a result, the Naval War College yearly has edited a blue book which comprises the international law problems given to the class for solution that year. This book has been much in demand outside the naval service. It has a circulation in foreign countries. Without thorough grounding in this branch of the naval profession, no officer is competent to face the complex problems which confront him constantly during the course of war, particularly in his contacts with neutrals. In times of peace he is frequently the only government representative on the spot and must act wisely and quickly. During the last year an officer has been assigned permanently to the college to handle international law in conjunction with Dr. Wilson, of Harvard. In the solution of the law problems, two are handled after the manner of individual solutions, and the remainder are committee solutions, given in full session of the College and subject to debate.

Lectures

The lecture course which is now a permanent and important feature of the work covers fairly thoroughly the field of international relations and lately it has entered the realm of economics, finance, industry and labor to a limited extent. No study of war is complete that does not embrace the subjects which lumped under the heads of resource, management and potential strength, form the background upon which our technical problems and plans must be laid. In the matter of international relations a sound grounding in this subject is important, particularly to older naval men who must act sometimes as the temporary agent of the State Department on the spot. Therefore we seek the knowledge which various experts in their line of work have to give us, through a series of lectures on chosen subjects, and we are particularly fortunate in being situated near such seats of learning as Harvard, Yale, Columbia, and other institutions whose professional men gladly contribute their services. This gives us the broad outlook and the latest information in international matters, but in order that we may steer a straight course in the matter of national policy we have lately, through the courtesy of the State Department, been given talks by the heads of the various divisions, and are furnished copies of the lectures delivered to the Foreign Service School of the State Department. This contact has proved of much value to the College. In return we furnish the Foreign Service School with such of our international law situations as they care to work upon.

In addition to the State Department, the College is endeavoring to make contacts with other Federal departments through the lecture course, realizing that the Navy is not a separate entity, but one part of a whole, a whole which must work thoroughly and efficiently in case trouble menaces our country. We have succeeded in making a number of valuable contacts which it is hoped will be

continuing, in order that the mutually interdependent technical details may be understood by our naval men on the one hand, and that an interest and understanding of our problems may be created on the other.

The Correspondence Course

The correspondence course in the last two years has been revised and now operates under a different system. Previously, while conducted from the College, it was quite independent of the work carried on here. It was handled by an officer of the staff who did nothing else and the problems issued bore no relation to the problems studied here. Now this officer is incorporated with the section dealing with tactics, and the problems given for solution originate with the tactical section and are reviewed by the same section of the staff which plans the tactical problems used in the course. The results of this adjustment should be an improvement in the course and more unanimity in the *critiques* submitted. No longer will the *critique* be a one man opinion but should be the consensus of opinion of the technical staff in tactics. The course itself consists of twelve situations, six of which are in the nature of questionnaires on war instructions and six on minor problem work. It is recommended that officers contemplating entering the senior and junior classes familiarize themselves with the work by taking first the correspondence course, and insofar as is practicable, this should be made a *sine qua non* for admission to either of these two classes. It has been found in the past that much time is wasted in elementary work, where officers upon entry to the College are not proficient in the rudiments. It is further an unnecessary handicap to those officers who are more advanced. The correspondence course is open to all officers in active service and in some cases to reserve officers. In addition, a special course in international law is open to reserve officers.

An Advanced Course

Each year the need for an advanced course becomes increasingly evident. Without it constantly we are going over preliminary work and we are not fitting officers to undertake work coming under the jurisdiction of the Joint Board, the General Board and the War Plans Division (Naval Operations) as well as we might. Neither are we able to study problems involving the highest phases of command. We are behind the Army in this respect.

In time, it is hoped to extend the Naval War College curriculum by an advanced course devoted to the study and the solution of broader military problems, to the further study of international relations, and to research work, carried to a more intensive degree than has been undertaken heretofore. To receive full value, however, the Department must at an early date perceive the necessity of inaugurating the advanced course, and provide the means for carrying on. We need the man, the money and the proper facilities. In its present quarters the College is cramped for space.

Relations with the Chief of Naval Operations

Relative to the service at large, the College is not an administrative organ. Its function is educational and advisory when its advice is requested. It has only minor matters of internal administration with which to concern itself. The college is directly under the Chief of Naval Operations and as such, strictly speaking, the technical head of the Navy is responsible for the general policies of the College. With the internal direction of affairs the Chief of Naval Operations does not concern himself, merely reserving the general right to regulate the College's relations to the service at large, or to other agencies. Fortunately the regulations in this regard are simple, direct and are better for that reason, much better than if they had lost their force through too much amplification. This attachment of the College directly to the Chief of Naval Operations is a wise proviso and puts into the hands of the Chief a very powerful instrument, useful to him in peace, and possibly doubly useful in war, for it is here only outside of the administrative atmosphere of Washington, that time can be given adequately to test theoretically the plans and ideas which the Chief of Naval Operations may have in mind. Correctly organized and used, the College may be of immense value to the Office of Operations. Under the present organization the College maintains direct contact with the War Plans Division, the Office of Naval Intelligence and with G2 of the Army.

Relations With the Fleet

It is somewhat unfortunate that the physical location of the College is at a distance from the operating ground of the fleet. This, however, is all the more reason that every effort should be made to preserve this most important contact beneficial alike to the students and to the officer personnel of the fleet. Even at present with its limited facilities, there is no reason why some of the problem work here should not partake in its general aspect the character of the fleet problems. Effort is now being made here to mould the work in this direction, in order that eventually theory and practice may go hand in hand. With the future development and extension of the College facilities, which are bound to come in time, as its practical usefulness to the service is appreciated better, the Chief of Naval Operations and the Commander-in-Chief of the U. S. Fleet should have at their service an organization beneficial in the framing and testing of problems before they are executed in the fleet, and capable of giving opinions in the form of *critiques* to the two leaders ashore and afloat, when such opinions may be desired. In time it should be possible to draw from the College a corps of efficient judges in the matter of fleet problem work. The present organization of the institution lends itself to this conception; it needs only the adequate staff personnel to put it into effect.

Relations with the Bureaus

With the Bureaus, the College maintains contacts in technical matters, especially with the Bureau of Aëronautics, which is in the development stage. These contacts are proving of mutual benefit.

Relations with the General Board

A connection which has proven of value in the past, and one which should never be severed, is that of the College with the General Board. The President of the War College is *ex-officio* a member of the General Board. He sits with the full board and his opinion may be sought by that body at such times as it considers advisable.

Relations with Army War College

Perhaps it will be seen now how much more readily the Naval War College will be able to undertake joint war problems under the present reorganization than under the old. We think, or attempt to think, in matters pertaining to the art of war along lines similar to the Army's way of thinking, and this would seem to be wise for after all there is no difference in principle between naval and military strategy and tactics though there are essential differences in detail. In matters of logistics it is a question of detail and not of principle that is involved. Only one feature is stressed to a greater degree than the Army would stress it and this is the matter of international relations. The reason for this is self-evident. The Navy is the external buffer between our federal state and other sovereign states. It works in this capacity both in peace and in war. The Army is the internal protector of the country and broadly speaking it comes only into contact with foreign states after war has been declared. Through this reorganization an attempt will be made in the future to give more emphasis to the solution of problems involving joint operations and to insure complete liaison with the Army War College. During the past year there has been an interchange of officers between the two colleges, extending over limited periods of time. In one of the late joint problems, an officer specially detailed from the Army War College was sent here to conduct the operations of the land forces operating pursuant to the problem staged here.

Outside Contacts

In the past the Navy has been prone to form a limited circle turning upon itself. This may have suited an older time, but it is not in keeping with modern progress nor is it entirely democratic in principle. Under the old system the Navy has produced many admirable officers, gallant, sound, efficient and broad minded, as the names Luce and Mahan will testify to. But the world changes. It grows broader minded each day. Its fund of knowledge increases with the scientific advance of the age, and with the improved world contacts. As the country moves forward, so must the Navy keep pace step by step; especially in an educational institution must the intellectual concepts be revised, improved and liberalized. There is no reason why a naval officer should not be a qualified technician and a broad-minded man as well, unless as he advances in age he looks backward to the details of his work,

instead of forward to the broad principles upon which his work rests. This attitude of mind, the broad viewpoint, the College endeavors to present and to inculcate in its more advanced students. To do this, and in turn to present our point of view, to make others realize that a naval man is not of necessity narrow, because he is a naval man, it behooves us to qualify intellectually and to seek contacts outside of the naval service purely. To this end, the more outside contacts of benefit that the College makes, for it is about the only naval institution which has the time, the better it is for the College, for the student body in it, and for the service at large.

Contact with the Naval Service

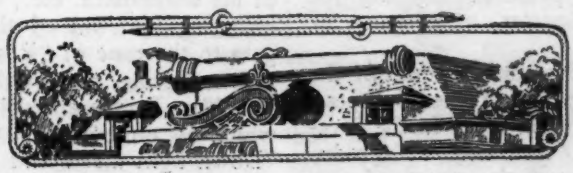
There can be little doubt that, as the years pass, the Naval War College is demonstrating its value to the entire service. It serves for the older officer in much the same capacity that the Naval Academy does for the midshipmen, that is it trains men to think accurately, act with decision and express themselves clearly upon subjects pertinent to their profession, and about which previously they have had little time to think. Contrary to what many officers conceive to be its mission, the College is not a school devoted to the instruction of line officers only. There is need and a place here for the representatives of every staff corps of the Navy. Though movement is the senior of all naval war operations, it is not the only factor, and no campaign of war can be successful which does not envisage the operation in its entirety. Not all men necessarily should come here. Some have not the capacity, and others are disinclined to undertake arduous mental labor. It is not the place for the theorist, until he has learned the lesson in the practical school of experience, that thinking, planning, judging and acting are all brothers, and that if the idea will not stand the practical test of service, it has little place in the efficient naval officer's brain. For the hard working, thoughtful and practical naval man this school will give his mental processes a polish such as they have never had before, and he will be the better man for having taken the course.

5. Finally

In laying the cornerstone of the Army War College, Washington, February 21, 1903, that distinguished statesman, Elihu Root, expressed the substance of the thought which brought that institution into being. In addition to other remarks he said,

> Other things being equal, the officer who keeps his mind alert by intellectual exercise, and who systematically studies the reasons of action, and the materials and conditions and difficulties with which he may have to deal, will be the stronger practical man and the better soldier.
>
> The same considerations which have led individual enterprise to build up our great universities and technical schools, to which the graduates of our schools and colleges resort to perfect themselves in every profession and in every branch of applied science, apply with equal force to education in the science of war. It is fitting that our Government should profit by the lesson which all its citizens have learned, that for success in any business the evolution from the simple to the complex must be accompanied by a more perfect system, a more careful selection of agents and a broader training of the men upon whom fall the responsibilities of control.

These statements are as true now as they were the day they were uttered and for the purposes indicated therein the Naval War College exists and serves.



The Last Cruise *of the* Old *Trenton*

By JOHN H. LLOYD, *Formerly Chief Electrician, U. S. Navy*

ON A RECENT visit to the present day *Trenton*, the writer, who served on her predecessor forty years ago, was requested to publish some of his recollections of the old Navy and of the old *Trenton*, and the disastrous fate that befell her.

It is hoped that these reflections may aid in preserving some of the best traditions of our Navy for the present generation in our fleet, and that they may cause other old sea dogs to tell of some of their activities.

From the Navy's foundation until the late eighties, many material changes had been made, but the methods of handling ships in combat and many of the drills remained unchanged. The writer has frequently grabbed a boarding pike from the mast and rushed to his station at the call "Away first boarders, port bow." He remembers well the torpedoes that were fired from the end of boat booms or spars suspended over the bows of the steam launch. The boat crews backed away as the torpedo was fired.

The advent of the ships of the white squadron changed the old evolutions and drills. From a fourth rate power in the eighties America became fourth naval power of the world in the nineties. Change in types of ships brought equally marked changes in personnel. How many can remember the old side wheelers, *Monocacy, Tallapoosa* and *Powhatan;* or the old *Tennessee* that was the pride of "fighting Joe Fyffe"; or the *Lancaster*, or a score of others.

This article will give some account of the *Trenton*, once the pride of the European Squadron, with her "iron men" in the forecastle, and her other "iron men" aft, graduates of Annapolis, and the peers of any seamen afloat. Their only equals were those old "down east skippers" from Maine and the men who served with them.

The enlisted personnel for the *Trenton* was assembled on the old *Vermont*,* which was tied up to Cob dock in the New York Navy Yard for so many years that she must have been grounded on the many dead marines thrown overboard in those pre-Volstead days. On a cold November day in 1887 the crew was assembled on the *Trenton's* quarter deck to hear Captain N. H. Farquhar read his orders. The Italian band played the national air as Old Glory was unfurled. The commissioned officers in their gold lace, the marines in their uniform of red and blue, the sailors in dress blue, and all hands at salute, made a beautiful and impressive sight.

The captain then made a short speech, which was followed by "pipe down." The officers repaired to the wardroom for that old time naval salute to "Sweethearts and wives, may they never meet," while such enlisted men as could went outside the navy yard gate for their toasts.

The *Trenton*, recently back from the European station, was now preparing for a cruise in the South Pacific. There was much speculation as to whether the homeward-bound pennant from the last voyage would be used on the return from the next. This pennant, still in the custody of the signal quartermaster, was five hundred feet long with a gold bladder at the end.

While fitting out, the young recruits were much impressed when a seaman, to be discharged for stealing, was taken on the dock by the master-at-arms and publicly stripped of his watchmark, etc.; the field music then escorting him out of the old York street gate to the tune of "Rogues' March."

On leaving the yard and approaching Brooklyn Bridge an evolution was executed which is unknown in the modern Navy. "Down light masts and yards" was the or-

* After forty years service she was turned over to the New York State Naval Militia, where she was rechristened *Granite State*. For many years, until destroyed by fire, she was a familiar sight at the foot of 96th Street and North River.

der, and in four minutes they were down; and five minutes after passing the bridge they were in place again. It would take many pages to tell the present generation of the size of these yards, the toggles and tripping gear used and the methods of carrying out this exercise.

On passing Sandy Hook we ran into a stiff northwester. All plain sail was loosed and sheeted home; with foresail, three topsails, and jib assisting the engines we logged eighteen knots for a time. At Cape Verde we coaled and then shaped course for Montevideo.

One evening enroute, Neptune, dripping wet, came over the bows to pay his respects to the captain and to announce that he would return the following day to renew old acquaintanceships and to initiate new arrivals into the mysteries of his dominions.

The following day he, with his retinue, was welcomed with great ceremony. After the preliminaries, policemen, pollywogs and other attendants gathered in the uninitiated to be tried, soaped and slushed, lathered and shaved, pilled and ducked. The officers were each fined two dozen bottles of beer to escape this punishment.

At Montevideo we saluted the flag of Admiral Breese on the sidewheeler *Tallapoosa*. During our stay Breese made the *Trenton* his flagship and invited many officials aboard to inspect her. He was justly proud of her appearance—500 feet long, ship rigged, ram bow, her main yard 110 feet. She carried 600 men and thirty officers. The battery consisted of ten eight-inch muzzle loading rifles; four thirty-seven-mm. Hotchkiss machine guns, and four Gatlings. With canvas and screw combined she could log twenty knots. The remarkable thing at that time was the electric lights. The *Trenton*, I believe, was the first vessel to be so illuminated. The searchlights had been imported from France.

A few days after our arrival a "pampero" blew in and a man was sent over the bow to insert the jackass in the hawse holes to keep water out of the berth deck. This man fell from the bos'n's chair and the life boat that was lowered went off rapidly to leeward. A German steamer rescued the boat with a line, but unfortunately she was in quarantine and took the life boat's crew with her to the quarantine station forty miles away. Ten days later this dirty, bedraggled crew in pants and undershirts were returned to their ship.

The *Trenton* sailed soon afterwards to the Straits of Magellan. She ran into the usual Cape Horn storm and was obliged to reduce canvas to cross reefed topsails and jib. She finally made the Straits, however, and stood into smoother water and anchored for a bit at Sandy Point to coal ship. On this passage several albatrosses were caught on lines trailing overboard. One of these measured seventeen and one-half feet from tip to tip of wings. Some of the old shell backs cooked these for mess, while others made tobacco pouches out of the web feet. These birds were the occasion for many stories by some of the old sea dogs. Some believed that the albatross carried the souls of lost sailors, while others argued that the pelicans represented in the living those seamen who were buried in isolated places.

In passing through the Straits we held big gun practice at one point; at another we mailed our letters in a box in a small cove located there by the P.S.N. Company. The letters were picked up by one of the passing steamers of that line, to be mailed at Liverpool. The noise of our big guns attracted many of the natives from their hidden recesses among the cliffs and glaciers. From their dirty little dug-outs men, women, children and dogs came around the ship, where we bartered with them for skins. At one time they were so numerous that the officer-of-the-deck had the electric search lights turned on them, and they fled in dismay.

After three days in the Straits of Magellan we entered Smith's Channel, which carried us a considerable distance up the Chilean coast. On leaving it we ran into the usual heavy gale, but succeeded in making considerable sea room before the hardest part of the gale struck us. For a time we were under three close reefed lower topsails, but finally were obliged to heave to under a goose winged close reefed main topsail and jib. Times such as these tried the seagoing qualities of officers and men. Men aloft were obliged to take in canvas that was covered with sleet, while they stood on a foot rope with their breasts jammed to the yard, both hands employed taking in canvas inch by inch and placing it between the yard and their breasts; then at times losing all that had been brought in and starting over again. Those were men

of dogged determination and the peers of all sailors afloat, and were officered by real seamen.

In due time we made Callao Bay, and the yards were squared, all sails furled, and made ship-shape. We saluted not only the Peruvian flag but that of England and Chile as well, as we found representatives of those countries in that port. The U.S.S. *Alert,* a bark rigged iron built ship painted white, was also in port. The following day the latter's boat crew tossed their oars under our bow, and the result was a boat race in which the *Alert* took from our crew $7,000 to cover an equal amount that had been placed on our after capstan. A month later, however, a return race was held, and the *Trenton* recovered $12,000. It was then the *Alert's* turn to eat cracker hash for six months. In passing, it may be mentioned that at that period the American Navy was equipped with the finest race boats in the world, turned out by those master boat builders at the Norfolk Navy Yard. Our Admiral's barge was a round stern fourteen-oared boat that had won every race when the *Trenton* was on the European station. In the stern sheets was the name "Olga" in gold letters, presented by the Queen of Greece.

We remained at Callao for almost a year, and from time to time heard rumors that matters in Samoa were not as they should be. In time we sailed to Payti to have practice in battle formation, gun drills and other maneuvers in preparation for future eventualities. Payti furnished few opportunities for shore leave, but drills without limit.

From Payti we sailed to Panama to await the arrival of Rear Admiral Kimberly on the *Dolphin.* Due to unsanitary conditions, no enlisted men were permitted ashore although this privilege was granted to officers. The writer was coxswain of the dinghy which carried officers from the steam cutter to the Marina steps and was thus able from time to time to slip ashore. This liberty to officers unfortunately, however, resulted in the introduction of Chagres fever into the ship. After this the ship was fumigated and all communication with the shore was stopped. However, in the meantime many burial parties wound their way up the slope of Dead Man's Island, Chaplain McAllister in his white robes leading the way and laying to eternal rest in that dismal place the remains of our shipmates.

On the arrival of Admiral Kimberly we steamed for Samoa. Many rumors were afloat: one to the effect that the German squadron, consisting of the *Adler, Olga,* and *Eber,* had sunk the U.S.S. *Nipsic.* En route we stopped at Papeete for coal and provisions and at that port several Germans in the crew took French leave. While here we lay quite close to the shore, where the island beauties dressed mostly in loin cloths could be seen from the ship. Due to our visit in Panama no liberty was permitted here. Several hundred men, however, swam ashore during the night and returned before reveille, their excuses being that they went to gather oranges from trees which could be seen from the ship.

Three days after leaving this port we arrived at Apia and found there, not only the American ships *Vandalia* and *Nipsic,* but also the British *Calliope* and the three ships of the German squadron. The commanding officers of the United States and British ships came on board, but the Germans were conspicuous by their absence.

The American Consul came on board and advised us to leave port due to the indications of an approaching hurricane. After consultation with the officers already mentioned our admiral sent an international signal to the German admiral, suggesting that all ships leave the port due to an approaching hurricane, but the signal was not even acknowledged. Possibly he expected some Yankee trick from this suggestion. At any rate the ships of all three nations remained in port and the ship commanders prepared for the gale. We sent down our masts and yards, put out three anchors at two hundred fathoms, and lashed down everything movable and prepared for the worst.

That evening we lowered our topmast and sent below as much of the top hamper as possible, got up steam and, as the wind increased, began turning the engines over slowly to lessen the strain on ground tackle. By morning it was blowing a living gale, and we saw that the merchant craft in the harbor had all been driven ashore and sunk. The wind came in strong blasts, accompanied by heavy rain, and the direction changed rapidly through sixteen points. This created a bad cross sea in the narrow channel inshore of us, but in the outer roads

we did not feel the effects so much as did the vessels in the inner harbor. We were, however, having a very uncomfortable time in keeping our berth deck clear of water, which came in through hawse pipes. The fact that these opened on the lower deck constituted a serious structural defect. The water found its way from the berth deck to the fire room in such great quantities that our pumps were scarcely able to handle it.

By 9:00 A.M. the barometer was down to nearly 29.00 inches, and a heavy mist enveloped the harbor. We could dimly see the German *Adler* and our *Nipsic* in difficulties. The former was apparently running amuck in the inner harbor. It was reported that a native pilot was attempting to take her to sea. A short time later the *Adler* almost touched the *Calliope*, but the latter's commander was able to swing his ship clear. At this time the *Vandalia* was pulling hard at her anchor. Later in the day the *Nipsic* was driven ashore, but her captain succeeded in beaching her in the only sand spot in the passage. This was at the mouth of a small river. Between the storm and the contact with the *Adler* she had lost her smoke stack, forefoot, foremast, rudder, and her poop deck. A number of her crew had been lost before she was driven ashore. The remainder left her by means of a rope from the ship boom, and landed on dry land.

The wind, now of hurricane force, was blowing at least one hundred and ten miles per hour. Shortly afterwards a tidal wave blew the *Eber* on the reef and drowned all of her crew except two men who were washed from her deck and lifted on the crest of the wave far inshore above the high water mark. Later the sea carried the larger *Olga* bottom up on top of the reef and more than 200 yards from its edge. She, however, lost only thirteen men. The entire poop deck of the *Vandalia* was carried away and with it her captain, who had previously been carried from the bridge in a bleeding and dying condition. Water logged, she drifted slowly toward the shore. We could see her crew in the rigging, but at that time we were unable to render assistance.

This left afloat the *Calliope*, *Adler* and the *Trenton*. The *Adler* attempted to get to the open sea; but meantime we had drifted to the inner channel and almost blocked the way. She came on, however, and we awaited her approach with dread. She first touched our stern galleries, carrying them away, then veered and drifted into the inner harbor, striking the *Calliope* as she went. She finally drifted ashore near the *Nipsic*.

The *Calliope* was endeavoring to make the open sea, and she too would necessarily pass close to us. Our steering wheel had been broken and the three men manning it were killed when the *Adler* ran into our stern overhangings, but by manning the lower rigging, the force of wind on the men's backs helped to veer the ship as was necessary. At this time we were flooded almost to our berth deck and helpless against the onslaught of the elements. The sea was white on its entire surface with foam created by the spray from heavy seas rolling in and dashing across the low lying reefs of coral. The morale of our crew was good, although the outlook for landing on what now appeared through the gloom to be a far and distant shore was anything but bright. We still had the menace of the *Calliope* to contend with, as it was quite evident that her efforts to pass through the channel would endanger both of us. We admired the seamanship of her captain as he brought her on inch by inch, foot by foot. When her ram bow was within a few yards of our port quarter our navigating officer gave the order to man the port lower after rigging and the starboard lower fore rigging. The force of the wind on the backs of those aft and on the fronts of those forward was such that our stern veered closer to the reef on the starboard side. This gave the *Calliope* a few more feet. When she was abreast of us the men left the rigging and waited orders to either repeat or man the opposite side. Captain Kane of the *Calliope* afterwards informed our admiral that this maneuver saved his ship and was one that he never dreamt could be so effective. In this passage we could see marks on the keel of the *Calliope* as she would ride the heavy incoming seas. As the *Calliope* passed her captain with a rope around his waist fastened to the bridge rail was the only man visible. He lifted his hat as we gave, or tried to give him, three cheers. (See page 954.)

We were drifting slowly toward the beach and steered as well as might be by manning the rigging, as previously de-

scribed, until finally the old ship laid down her bones, so to speak, alongside the *Vandalia* that evening of the third day. (See page 955.) We assisted in taking the survivors of that ship from her rigging. Our good ship in being beached broke her back and sank as far as possible, our gun deck being already flooded before we struck.

The following morning we went ashore in a smooth sea and a slight breeze. The desolation ashore was a sight. Every tree was uprooted, every house wrecked, and the sea shore a mass of ship parts and fittings. We established our camp in the Moore compound and immediately commenced salvage operations. The first order issued by Admiral Kimberly was that the *Nipsic* crew board their ship and stay there. The following day the whole of Seumanutafa's army assisted in pulling her into deep water. Despite the casualties that have been mentioned, we were able to make such repairs as enabled her to be taken to Honolulu under the command of Lieutenant Commander Lyons, who had been our executive officer.

The German commander requested the aid of the *Calliope* in pulling him off the beach, but it was feared the strain on her engines and hull would be too much, and instead certain of the natives who were opposed to the forces of Seumanutafa were secured for salvage work. Kimberly and Seumanutafa agreed to the use of these natives, who were at the time further down the coast and under arms that had been supplied them by the Germans.

Lieutenant Wilson was sent to New Zealand to notify the Navy Department of our condition and to secure transports for all hands to the United States.

The *Calliope* furnished us with provisions and also loaned two diving outfits which were invaluable in the salvage operations.

The efforts of Seumanutafa and his natives added materially in reducing the loss of life, as during the height of the storm they waded and swam from the beach to pick up men struggling in the water. It is said, however, that they made no efforts to rescue drowning Germans, as they felt the Germans were responsible for the death of many of their associates, because the latter had been supplying the opposing tribes with guns and ammunition. (See page 1043.)

A small cemetery was established back of the town for the burial of our dead. The burial services were attended by a large number of the natives, although none of them were present at the German funerals. The German camp was established at the other end of the town, a small river dividing the two camps.

Chaplain McAllister conducted a large memorial service for the dead and a thanksgiving service for the survivors, which was attended by the whole of Seumanutafa's army under arms. They were visibly impressed by the ship's music and the ceremony at colors each day. Admiral Kimberly instructed the band leader to compose a medley of Samoan music. Several of the chief's daughters were induced to sing a few war ditties and from these the band leader composed a so called national hymn of Samoa. Thereafter it was the custom to play this hymn immediately after our own national colors. It is needless to say that the natives were delighted at this recognition.

Eventually the *Rockton* arrived from Australia to convey us to San Francisco. This old tub was designed to accommodate approximately 100 people, but it was necessary to put all the survivors of the two ships on board. The trip to the coast was miserable in the extreme, as there were nearly 700 survivors on board. We were only too glad to leave this desolate spot.

Upon our return to the homeland and after we had reported to the old *Independence*, congress voted us a full year's pay. Soon afterwards the crew was distributed to other ships, principally the *Omaha, Marion* and *Charleston*.

The Wreck *of the* Old *Trenton*

EDITOR'S NOTE: An account of the wreck of the U.S.S. *Trenton* and other vessels at Apia, Samoa, in 1889, from a copy of the *London Times*, April, 1889. The enclosed account of the great hurricane at Samoa was kindly forwarded to the NAVAL INSTITUTE by Rear Admiral Thomas Washington, U.S.N., at the request of Rear Admiral C. A. Gove, U. S. Navy (Retired). See Editor's Note at end of this account.

COMPLETE particulars of the hurricane at Samoa, on March 16, have now come to hand, enabling us to realize such a picture of terror and destruction as the records of the ocean have seldom, if ever, before presented. On the night of the date mentioned, seven warships, together with a few merchant vessels, were lying at anchor in the harbor of Apia, between the town and long reef which shuts it off from the Pacific. Three of the warships were German, three American, and the seventh was her Majesty's steamer *Calliope*—a screw cruiser of the third class of 2,770 tons and 4,020 horse-power, commanded by Captain Kane—watching the still but half-extinguished feud between the representatives of the Fatherland and of the Great Republic. The beautiful scene—for Apia, like all the islands of that sea, is a perfect paradise of loveliness—was somber with the hush and gloom of a coming storm. The barometer was falling, but at that season cyclones of a mild character are common about the Samoan archipelago, and the harbor, though much encumbered with rocks, and having only narrow exits east and west, was apparently the safest place. The seven warships, therefore, kept to their ground-tackle, but got their steam up, and waited.

In the middle of the night the tempest broke upon them—no local cyclone as had been expected, but one of those terrific whirlpools of wind which from time to time scour the Pacific and carry death and horror in their awful path. As morning approached the hurricane developed itself fully, blowing right away from the mainland, and straight on to the long belt of reef which shuts in the harbor.

In these frightful typhoons the fury of the wind is such as to beat down the water into a seething milky turmoil, which for the time being shows no waves. Each crest that would rise is flattened into the mass by the fierce passage of the tempest, and the ship at anchor amid the furious gale rides with strange steadiness, but with her cables stretched like harpstrings, and a roar in her rigging as of ten thousand demons shrieking. Yet, let the wind lull only for a moment, or chop round ever so little, and that milk-white surface of the sea suddenly leaps into billows, which, once raised, are rolled by the storm almost instantaneously into vast mountainous ridges of water, and these hurled with indescribable wrath, against a vessel, split her bulwarks to splinters, sweep from her decks every movable object, and fling her from her moorings with such vehemence that either the chains must part, or the flukes snap, or the deeply-buried anchors plough backward through the ooze and "come home."

Fearful was the strain upon every one of those seven warships off Apia when the light came on March 16, and hardly had it dawned before the *Eber*, a German gunboat, dragged helplessly, parted her cables, and, in spite of her hard-working engines, crashed on the rugged reef, slid back again with the reflex wave, and went down in the deep water under the coral shelf with all hands. A whole watch was below with hatches battened down, for the chain had very suddenly snapped. They were, of course, drowned with all their fellows, and hardly a cry heard; while shortly afterwards a huge wave wrenched the *Adler* from her anchors, hurled her upon the remorseless reef, and flung her broadside over its face. A few officers and men made their escape by favor of the waves, while near at hand the United States sloop *Nipsic*, overpowered, and drifting, managed to get steering way for a smooth bank of sand, and ran high and dry upon a spot where,

by lowering boats under the lee, the captain could save all hands, except six men, drowned through capsizing.

Here were three good vessels already gone, strewing the harbor waters with corpses and wreckage, and still the awful storm raged unabated. The American corvette *Vandalia*—a fine old-fashioned, wooden, bark-rigged ship of 2,100 tons, which carried General Grant in his tour round the world—was the next victim. The fury of the hurricane swept her loose, and dashed her on the reef, fifty yards from where the *Nipsic* lay, but, unlike that vessel, on hard rock, where the first wave washed her captain and many of the company to their death, and the next bilged the vessel in, so that she sank with part of her hull and her tall masts remaining above water, covered with clinging sailors. The *Trenton*, American second-rate, of 4,000 tons and twelve guns, was still riding it out, but drifting nearer and nearer to the *Calliope*, the British cruiser, whose steam was up at its high-pressure, waiting for the final moment when she must "cut and run." Already the *Calliope* had collided with the hapless *Vandalia;* and she must soon have the *Trenton* upon her; the day was waning, the tempest strong as ever. Captain Kane determined to trust his powerful engines and make for the open sea.

The account says:

> It was a momentous resolve, for the anchors and engines together had failed to save the other vessels in the harbour. When Captain Kane threw the head of the corvette into the teeth of the storm, and slipped his cables, the *Calliope* for an appreciable period of time, remained perfectly still. Then she gathered headway by inches, and finally moved at a snail's pace past the *Trenton*. As the *Calliope* steamed into safety, the 450 men who formed the officers and crew of the *Trenton*, though momentarily expecting a fatal disaster to themselves, raised a ringing cheer as a tribute to the brave daring of the English commander. The crew of the *Calliope* returned the greeting as heartily.

Consider the scene and the matchless heroism and generosity of the Yankee crew. Almost sure of instant death themselves, they could see the Queen's ship at her utmost steam-pressure, fighting, fathom by fathom, her way to life and safety; could appreciate the gallantry of the effort, cheer the brave, handsome ship defying the hurricane, and, finally, see her glide past, overcoming the roll of the sea and the savage wind with the generous pleasure of true mariners, glad of a smart and daring deed. We do not know in all naval records any sound which makes a finer music upon the ear than that cheer of the *Trenton's* men. It was distressed manhood greeting triumphant manhood; the doomed saluting the saved; it was pluckier and more human than any cry ever raised upon the deck of a victorious line-of-battle-ship; it never can be forgotten, and never must be forgotten by Englishmen speaking of Americans. Sure we are that the echo of that noble "Huzza!" must have made every man on board the *Calliope* long to lay hold of the *Trenton*, and give her a "cast-out" at any cost beyond the dreadful reef.

It was, however, all she could do to clear her American consort; to have towed behind even a gig or a dinghy would have certainly lost the battle she was waging foot by foot against the hurricane. Her mighty engines, pressed to their utmost, saved her at last; little by little she struggled out to the sea-gate, and, once free of the reef, a bit of headsail flung her bow to the wind, which soon aided the panting engines to drive her far away to seaward, out of all danger. But let landsmen realize how that success was won. Let them think of the stokers toiling in the tossing engine-room, urging the fierce furnaces; of the engineers driving up the steam gauge, risking deadly explosion to save life and the ship; of the officers and crew on deck, hardly sure that the vessel stole forward an inch upon the reef, hardly able to see or speak or stand, but doing their duty perfectly to the Queen, and with breath and heart enough to answer that noble "God-speed" of the Yankee flag-ship. Since seafaring began there never was a wilder sight than Apia harbor that March 17, nor any nearer touch-and-go escape than the skillful start of the *Calliope*, nor any more gallant, generous, and unselfish demonstration than the cheer which the *Trenton* gave the Queen's cruiser as she forged ahead out of that death-trap of storm and ruin between the reef and the town.

The next incident, says the account, was the sinking of the *Vandalia*, and this, too, embraces an instance of noble conduct. Her rigging was thronged with men when the *Trenton* found herself in her worst difficulty. The fires were out, the sails gone, the pouring of oil on the waves had proved useless, and the danger was imminent of a collision between the *Trenton* and the *Van-*

dalia, which would destroy the last hopes of the survivors clinging to the rigging of the latter. At this juncture Lieutenant Brown, of the *Trenton*, ran up the ship's colors, the only flag that floated at Apia that day, ordered the ship's band to play "The Star-Spangled Banner" and sent half his company into the port-rigging, rightly calculating that their weight on the side next to the storm, and their mass of resistance to the gale, might help the maneuvering of the ship. As the *Trenton* and the *Vandalia* approached towards collision, the *Trenton* men cheered the *Vandalia* crew. The latter replied as well as they could, with their throats enfeebled by exposure, but with all good-will, as recognizing that the *Trenton* was their unwilling executioner. Yet, strangely enough, the *Trenton* never came alongside a dock more gently than her stem now touched the *Vandalia*, whose survivors swarmed upon the larger vessel's decks into comparative safety. Thus out of peril came sudden salvation, and the American corvette, which cheered our ship, not only lost no hands, but saved the survivors of the *Vandalia*, though she afterwards went to pieces.

The German corvette *Olga*, which drove ashore, has since been got off, and taken safely to Sydney, and the *Nipsic* was also floated again, but never to re-cross the Pacific to her native coasts.[1] Altogether one hundred and forty-three lives were lost in this most disastrous tempest, and at least four good ships of war, besides many merchantmen, yet greater and more majestic than any hurricane, than any death or disaster, is once more proved to be the spirit of man, which, in a scene of dreadful tumult of nature, where strong vessels were helpless as chips, and the stoutest skill was useless, could raise above the whirlwind that dauntless cheer to the *Calliope*, the expression of an immortal courage—a cry, all things considered, of such indomitable Anglo-Saxon pluck as to ring finer than any which has ever echoed under the flag of victory, or in the happiest hours of security and success.

[1] EDITOR'S NOTE: The *Times'* article was printed but a short time after the disaster and before the *Nipsic* sailed to Honolulu.

It is too bad this *Times'* article, especially lines 9, 10 and 11, page 954, could not have been reprinted at Geneva when the British correspondents were looking for press copy!

Bully Hayes—Pirate De Luxe

By J. B. Musser

FOR a half century waterfront gatherings throughout the Pacific have been enlivened with tales of Captain "Bully" Hayes and his famous pirate crew. From San Francisco to Sydney his exploits are recounted, nothing being lost in the retelling, and it is for the purpose of rescuing him from the myths and their accretions that the present glimpse is taken into the real life of as charming a rascal as ever broached a keg of stolen port.

Murder, blackbirding, maroonings and heartless cruelty have been laid at his door together with charges of cowardice and faithlessness. But surely a man must be exonerated from the suspicion of fear when he can boldly sail into a port where a price is upon his head, take a drink with the officials looking for him, get what he wants in the way of supplies or plunder and laugh at their discomfiture as he sails away. It is admitted, however, by those who knew him best, that his violent temper sometimes led him to excesses of cruelty while under its sway. That he left a train of broken female hearts in his wake also seems authenticated and his weakness for the fair sex influenced his whole career. Surely no bad, bold pirate man was ever built upon lines more likely to appeal to women, for we are told "his hair fell in golden clusters across his forehead above eyes of the brightest blue. His nose was a bold aquiline; a well-cut, full-lipped mouth that could set like fate was covered with a large moustache and a Vandyke beard completed the *tout ensemble* of a visage which once seen was rarely forgotten by friend or foe."

A Modern Buccaneer—William H. Hayes was born in Cleveland in 1827, educated at Norfolk and later entered the U. S. Revenue Cutter Service, where he served with honor and distinction. Such a start might seem a fitting prelude to a successful life in an honorable profession rather than a career of piracy, but our debonair young Apollo, who stood over six feet in his stockings and was not unaware of his irresistible smile and winning personality, was a creature of moods, at times a tiger in ferocity and at others the embodiment of all the gentlemanly virtues.

A quarrel over a boyhood sweetheart is said to have caused his resignation from the Revenue Cutter Service, and he wandered up to the Great Lakes where he was soon captain of one of the steamers on Lake Erie.

In 1854 he joined the Navy and served under Admiral Farragut. His personal attractions here proved his downfall, however, for he fell violently in love with the sweetheart of one of his brother officers, Captain Carroll. The resultant feud became so bitter that Carroll never forgot and years afterward during the Civil War he brought the confederate cruiser *Shenandoah* into the Pacific and sought to locate Hayes, who was operating there, in an endeavor to settle old scores.

Torn through his love for the girl and enraged at his brother officer, Hayes resigned from the Navy and took up with a crowd of New York's nimble-witted gentry, from whom he learned a philosophy of property rights not generally recognized by authorities on economics. His subsequent departure from New York aboard a sailing vessel bound for San Francisco may have been from necessity or inclination. True to his reputation he had a "wife" with him on the trip, and before it was over he had definitely decided upon a career of piracy or at least had decided to become an enemy to the established order and to win riches and fame as a freebooter in the romantic South Pacific. With characteristic dispatch he started to carry his plans into effect.

Aboard this same boat was a rich merchant journeying to San Francisco, who fell under the spell of the charming young Hayes and spent long hours listening to fic-

titious accounts of shipping and ships, manufactured for the occasion by the budding freebooter. By the time San Francisco was reached this gentleman was ready not only to make a substantial investment in the "China trade" but also to set up Hayes' "wife" in the liquor business against his return from his first cruise, for Hayes was to command the ship fitted out by this gentleman and they were to divide the profits at the end of each cruise. The fact that the older man gave credence to the rather fanciful tales of the younger is testimony of his captivating manners and helps to explain why so few people in all his long career ever refused to be led astray when the captain had them under his forceful eye.

The brig *Otranto* was purchased and fitted out most extravagantly under Hayes' direction, as to "inaugurate so momentous an undertaking of this trans-Pacific trade route in an ordinary vessel would be most inauspicious." Everything was of the best and money was not spared. Provisions fit for a king's table were provided, with liquors and spices in keeping.

With final instructions to his wife and a farewell shake of his partner's hand the captain repaired on board "to complete the arrangement of the cargo" so that the customs could be passed. It was agreed that the partner would come aboard in the morning and accompany them out of the harbor. That night the *Otranto* hove up her anchor and with a fair breeze slipped quietly away through the Golden Gate. Her owner was never again to lay eyes upon this craft, and Hayes thenceforth was a pirate with a price upon his head.

The *Otranto* sailed straight for China where she disposed of her cargo to good advantage. The life of the tramp trader suited the captain to a turn and he showed great ability in trading, his genial personality standing him in good stead. For months he plied between ports along the coast with cargoes of coolies or produce. He also raised money at a number of places on bottomry bonds, so much indeed that when the *Otranto* was finally seized to pay her liabilities he had sufficient to purchase the *J. Bradley Jr.*, in which he sailed the length of China, committing depredations upon dealers in the various ports and raising money upon bottomry bonds when convenient. At last with a price upon his head he sailed boldly into Shanghai harbor, where the following characteristic incident took place which well illustrates his methods.

He ordered from a somewhat obscure dealer an outfit of clothes, costing about $500 for himself and about $40 each for the members of his crew. The tradesman was overjoyed with so unexpected a windfall and worked assiduously to complete the order on time. As was customary the clothes were delivered beforehand and on sailing day the tailor came off to collect his pay. He was shown to a seat by the charming captain himself who requested that he wait until the boat was gotten underway when he would have leisure to go below for the money. Here and there the captain flew, issuing orders and lending a hand although to what purpose may well be asked as the pilot was aboard and had charge of the boat. She was finally under sail and passing out of the harbor. The tradesman in desperation asked for the money that he might return.

"The money? Ah yes, to be sure, the money, of course," smiled Hayes. "But you must see that it is inconvenient that I should pay you now. I will return later and attend to that small matter; at the present moment I am going to sea. You may either go back in your boat or go with me." Amid the sly smiles of the crew the unfortunate man scrambled sputtering over the side.

The *J. Bradley Jr.* was finally lost through a lawsuit in Adelaide, Australia, and with it every tangible asset of the captain. Alone and penniless on the foreign shore but undaunted by his reverses the rascal paid a whirlwind court to an estimable lady of means described as of "interesting demeanor and irreproachable character." The lady's heart melted before his ardor and together they planned a trip to America where she would "sail by his side" and share in the romance and peace of their ocean honeymoon. Luck favored them and the captain was engaged to command the bark *Orestes*, shortly to sail for Vancouver. Elated, Hayes could not resist spending the short time before he sailed in selling shares in a boat in which he had no interest whatever to some gullible miners in Melbourne.

The stolid Britishers did not take well to the dashing captain, who shortly had aroused the enmity of most of his passengers. In fact so strained became the relations aboard

ship that she had no sooner dropped anchor in Honolulu harbor for provisions than a series of misfortunes wiped away all that he had gained. His wife secured a separation from him on the grounds of cruelty. Mr. Clements, the supercargo of the *Orestes*, exercised his prerogative and removed him from command and a number of suits were filed against him by the passengers. One of them claimed that he had entrusted £400 to the captain to be invested in liquor to be sold to the steerage at a profit, and that was the last he had ever seen of his money or liquor. And thus within a fortnight of his Australian windfall he found himself again in a strange port and without wife, friends or money.

In a short time he succeeded in running bills and circulating bad drafts to the amount of $2.000 among the Honoluluans who were not proof against his blandishments. One of his victims was a prominent business man from whom he secured a loan of $50, pleading a sick wife. Finally with a courage wholly characteristic he decided to return to San Francisco where he was wanted for piracy. Accordingly, he embarked secretly, leaving Honolulu to collect its bills and settle its suits against whom it might. Whether as a strange coincidence or a tribute to his charm, his wife took passage upon the same boat to "seek friends in San Francisco" and before the voyage was much more than over so ardent had been his attentions that he had won her back to his bosom.

One of his first experiences in San Francisco was to walk face to face into the owner of the *Otranto*. The meeting must have been a severe surprise to both, although here the poise of the rascal is displayed in that he did not lose his wit but, concealing his surprise, laughed winningly and, restraining that irate gentleman from calling the police, piloted him to a table in a nearby café. With the soundest of logic he now explained as he filled the glasses from a bottle of rare old wine, that to call the police would be to rob him of any chance which he might have to recover his loss. In fact, and the genial rogue warmed to his task as he saw a flicker of weakness cross the face of the other, he (Hayes) had returned to San Francisco for no other purpose than to make what restitution he could for the owner's loss. He had a draft due from the *Orestes'* owners, which would arrive shortly from Honolulu. This he intended handing over to him, unless, he smiled and shrugged his shoulders, the gentleman wished to put him in jail, in which case he would get nothing. The argument sounded plausible and they shook hands over another bottle of wine as the owner parted with the only chance he would ever have to recoup his losses or at least punish his defrauder. He never again laid eyes upon the captain nor upon his draft.

If a ready wit and much nerve were required to negotiate successfully that ordeal, imagine the amount required to emerge successful upon the following day when in company with his Adelaide wife Hayes was stopped by the San Francisco wife who had been left in the liquor business. A quick intuitive appraisal convinced him that the Adelaide wife loved him the more and was the more desirable. He therefore excused himself and left her standing on the sidewalk as he drew the San Francisco wife aside and frankly explained the situation to her, begging her to help him out of his difficulty for old times sake. As a token of gratitude he would turn over to her his mythical *Orestes* money, some $3,000, as soon as it should arrive. The charm and appeal of the rascal is evident when this wife agreed to relinquish her claim to him in consideration of the money promised and he thus emerged triumphant from this second most trying experience. That the Adelaide wife clung to him even after this is proof of her fidelity and genuine love.

Hayes realized that San Francisco was no place for him to tarry, so he raised $500 cash, probably borrowing it from his wife, and made a first payment upon the ancient and leaky brig *Ellenita*. He then had her hauled upon the ways of Tichenor and Company and thoroughly overhauled. Next her cabin was fitted out in great luxury quite out of keeping with her rotting timbers; carpets, furniture, everything was new and of the best. This habit of a luxurious cabin clung to Hayes throughout his long career. He then laid in his provisions and included liquors, wines and delicacies of every sort, all of which he took care to purchase on credit from various widely separated and obscure dealers who not being accustomed to supplying ships were highly flattered at the business which the charming captain, led by a benevolent providence, brought to their

doors. He then advertised quick dispatch to Australia and collected the passage money and freight advances from his victims in advance to the amount of several thousand dollars. So well had he worked his cards that the good brig *Ellenita* stood completely overhauled, painted and ready, furnished and provisioned throughout without the outlay of any actual cash on the part of the captain.

An event now transpired which caused him to hurriedly change his plans. The man who filled the *Ellenita's* water casks smelled a rat and put a lien on the vessel for his wages. U. S. Marshal Solomon took charge of the brig and Hayes quickly saw that should the other creditors hear of it his game would be up. Not to be outwitted, he got such of his passengers as were in the vicinity onto the boat forthwith, together with most of his crew. That night, Sunday, August 28, 1859, during a temporary absence of the marshal, the *Ellenita* drew silently out of the harbor and with a fair breeze squared away through the Gate and into the open sea, clearing the customs without so much as a backward glance.

When Marshal Solomon returned and found the boat gone his rage was boundless. He spread the alarm and started in pursuit in the steam tug *Martin White* but, as the press account remarked, "it was like starting a snail to catch a swallow." The gray dawn found a motley assembly of tradesmen and passengers lining the dock and peering into the west but seeing nothing. A sad incident many times since used as an example of the captain's cruelty was the carrying off of a wife and three children of one of the passengers and leaving the man ashore. This, however, was likely an accident incident to the unannounced departure.

So widespread had been his dealings in San Francisco that it was weeks before a complete list of all his dupes could be compiled. As for the captain, he was having troubles of his own aboard the gayly painted but rotten old craft, in the tears and remonstrances of the members of broken families and the dissatisfaction of the crew, who knew the real condition of the vessel and resented the dirty forecastle where they lived in marked contrast to the luxury of the cabin. Wisely, Honolulu was given a wide berth, much to the disappointment of his miserable human freight, who had hoped to have things set to rights there, and the *Ellenita* dropped anchor before the little town of Kahului on the island of Maui. Being without papers he had neglected to enter through the customs as prescribed by law and the captain was therefore obliged to undergo arrest at the hands of the local sheriff, who had galloped across the island with no other purpose than to apprehend him.

Delay here would be fatal. Hayes apologized profusely, stating that his mate had informed him that the port required no formal entry. "If, however, he had been misinformed he would be delighted to comply with the requirements now." The integrity of the champion of the law was proof against such blandishments, however, and he indicated the jail at Lahina across the island, that being the port where the brig should have made formal entry.

"Of course they must comply with the law," and the captain would go along gladly, but first would the sheriff accompany him on board while he gave instructions to his mate to bring the boat around? The officer acquiesced, not intending to let his prisoner give him the slip. Once on board, Hayes set about to make things so agreeable that the sheriff finally accepted the invitation to dine in the pretty cabin. Dinner finished, a bottle of rare old wine and a cigar such as was seldom seen on Maui and a fascinating story from the captain whiled away the hours until dark. Under the spell of the congenial atmosphere the sheriff accepted a proffered bunk and stretched himself to sleep.

When officer Treadway rubbed the wine out of his eyes in the morning the *Ellenita* was already coming around to a fair breeze. That Hayes enjoyed the situation is indicated by a letter which he sent to a Sydney paper. He claims that the officer helped him work the brig out of the harbor before becoming suspicious, at which time the captain informed him that they were setting their course for Australia and he might go along as the boat's guest or he might hop over the side and return in his own boat. What the feelings of Treadway were as he stood upon the beach and watched the *Ellenita* hull down on the horizon we can only surmise. Hayes ends his letter with these words: "Goodbye, sheriff, how little your employers dream of the good old soul that lies concealed under your parchment covering." A newspaper mentions that with

characteristic poor memory the captain forgot to pay for the provisions he had taken aboard at Kahului.

The mate of the *Ellenita* was one Henry Miller, also somewhat of a character, upon whose head there was a price in Honolulu. He hated Hayes and was no doubt somewhat unfair to him in the account which he gave of the fate of the *Ellenita* which was widely published at the time. The facts in the case were these: After leaving the Hawaiian Islands rough weather was encountered which opened seams and flooded part of the hold of the old craft. Progress became slow and the water supply ran low, the crew being placed upon half rations. Later the food supply also gave out, necessitating rations for all alike. The brig leaked worse and worse and the pumps had to be manned in shifts throughout the day, much to the discomfort of the miserable crew suffering from lack of food and water. The ships chronometer failed them and they were off their course, not knowing where they were most of the time. In this sorry state the water in the hold started to rise faster than the pumps could handle it. Thinking they were in the vicinity of Savaii, the largest island of the Samoan group, the captain set his course for that place. Soon, however, the old ship began to settle in the water and a raft was hastily made on deck and provisioned. The crew and the men passengers were placed aboard this raft and towed clear of the foundering vessel. The captain with a couple of men to row now loaded all the women and children in the only boat and got away just as the *Ellenita* disappeared below the water.

Hayes' feat in navigating this small boat to Savaii for help while the raft with fifteen men aboard drifted helplessly for twenty days before bringing up at Wallis Island has brought him both praise and blame. The indescribable sufferings of those on the raft without food or water except the occasional showers and the fish they caught, form an epic of suffering in South Sea shipwreck tales. They were finally landed more dead than alive on Wallis and cared for by the natives and good missionaries of that place who nursed them back to life. They were eventually picked up by H.B.M.S. *Elk*, Captain Champion, and transported safely to Sydney and there enjoyed the reunions more dear because of their long and devious journey. Hayes and his party were also finally rescued from Savaii and taken to Sydney, where the captain was introduced to the jail upon his arrival.

As usual he did not spend much time in durance vile but appeared again in a remarkably short time as the skipper of a boat in Batavia, where he came off victorious to the extent of several thousand dollars in a deal with the East India Company. From Batavia to China and a load of coolies was his next adventure, collecting for their passage in advance as usual. Soon he appeared off Port Phillip (where his coolies were assigned), flying a flag of distress. There was a head tax of £10 per head to be paid on the landing of the coolies. When assistance arrived they found men straining at the pumps, though the water came from the ship's own casks broached for the purpose. "For the sake of God, men, save my passengers first and then fetch aid. Until you return we will keep the vessel afloat but lose no time," shouted the gallant captain as the boat came alongside. The coolies were accordingly hustled into the boat and willing backs bent to the oars on their mission of mercy to fetch aid for the sinking ship. Before the good Samaritans reached the beach however, they had the satisfaction of seeing the schooner up stick and away, leaving them to collect the head money from whom they might.

From island to island the captain flitted during the next few years, in and out of the harbors, never staying long enough to be apprehended. He took an especial delight in robbing German plantations, though he also pestered the mission stations, swindled merchants, stole trading schooners, committed maroonings. Indeed to recount all the adventures of the restless knave would be to write a good many chapters of the history of the South Seas for the period. All this time he eluded the British and American warships which were looking for him. Once he was picked up by the U.S.S. *Narragansett* but he made such good use of his wits that the affair ended with mutual protestations of friendship and esteem between the gallant skipper and the dashing pirate. Again he was arrested by the British consular agent at Upolu but made his escape.

His boat, the *Leonora*, was a schooner rigged yacht said to have been stolen from

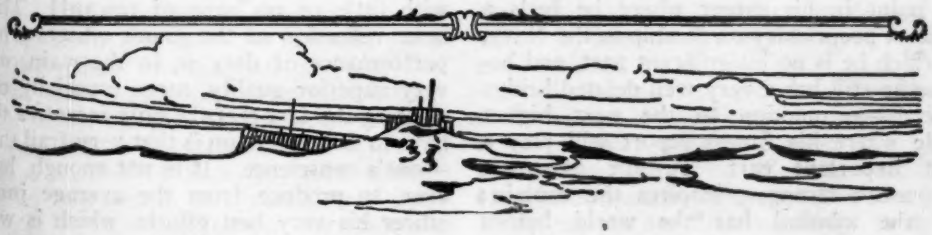
San Francisco harbor. She carried several guns and a motley crew of freebooters primed for any venture. This boat was finally lost at Strongs Island during a hurricane and the captain, who had barely escaped with his life, was arrested when H.M.S. *Rosario* appeared. But his luck held and he escaped from the island with some of his crew in an open boat, in which they traveled from island to island, always eluding capture but suffering the greatest of hardships and privations. Indeed so great became the distress of the captain that he resorted to hypocritical subterfuges to dupe the simple mission stations throughout Polynesia's small islands. His scheme was to "get religion" of whatever brand he found preached where a chance appeared to make a small raise. Thus he ran the gauntlet from Catholicism to Christian Science in a very short time.

Small satisfaction must have been his in cheating the simple missionaries for small driblets of food or cash. He had played too long with big game to take well to this life, and besides small chance was afforded for making a substantial raise in this fashion. Accordingly he took fate in his hands and again sailed to San Francisco on a schooner from Guam. He stayed only long enough to make away with the yacht *Lotus* from the harbor.

This happened in 1876 and in December of the same year he touched for the last time at the Hawaiian Islands on his way south. He avoided all the ports where he was known and anchored off the small native village of Kawaihae where he purchased and paid for some fresh provisions and sailed quietly away.

Dr. Ingalls of Samoa was the victim of one of his last adventures and has left this description. Arriving at Samoa from Hawaii, the captain persuaded the doctor to accompany him to treat one of the kings on the westward islands who was ailing. He promised the doctor a fee of $2,000 for his services, half to be paid "shortly" and the other half "later." Reaching Jaluit the doctor was set ashore, directed to the house of the chief, who had paid Hayes for fetching him, and told that if he complained of his treatment he would get his "bones broken for his trouble."

But before the *Lotus* left Jaluit, a Norwegian sailor deserted and the captain delayed his departure long enough to capture him and secure him aboard. He then set sail and had the man triced up to the mainmast and flogged. The Norwegian, despite his suffering, remained unconquered in spirit and trouble again arose a few weeks later. The man was again triced up as before and brutally flogged. He continued to resist, however, and Hayes in exasperation went below to fetch a revolver avowedly to shoot him. As soon as his head disappeared below, the sailor seized the boom crutch and when Hayes again appeared above the companionway, the Norwegian struck him fairly on the head and stove in the top of his skull, and thus the terror of the islands who had for years crossed and recrossed the Pacific, leaving comedy, tragedy and melodrama in his wake, whose keen knowledge of human nature and ready judgment had enabled him to defy all powers and escape all punishments for his misdeeds, was retired from the arena by a most commonplace if not unworthy foe.



Incentive *in the* Junior Grades

By LIEUTENANT COMMANDER W. ATLEE EDWARDS, *U. S. Navy*

IT IS human nature, which unfortunately we can't change, that a man's efforts are in proportion to the reward at stake. Few, if any, of us work because we like it. We do so because of some *incentive* which is either the fear of punishment or the hope of reward.

In almost every other walk of life the *incentive* to effort is pecuniary gain, but in the Navy the *incentive* which inspires our souls is either fear of punishment or the knowledge of duty performed to the best of one's ability. It is this and nothing else unless perhaps it be the faint hope of possible promotion by selection, but in the lower grades such hope is so faint as to be almost negligible. This is not a criticism but a statement of fact, for how many lieutenants (j.g.) are inspired to their greatest efforts by the hope of promotion to the grade of commander?

This applies, I think, only to the junior grades, for in the higher grades it is a very different story. There the *incentive* exists and there it is a very material and a very tangible thing. A senior lieutenant commander, for example, strives for a good fitness report in order to insure his promotion by selection to the next higher grade *which is in sight.* The *incentive* there is so great that it stands right out and slaps him in the face and that is just what we need in the junior grades. A commander finds the *incentive* in his soul because he has reached the point in his career where he feels a sense of proprietary ownership in the Navy, of which he is no insignificant part, and because he still has a very well defined bridge to cross—promotion to the next higher grade where his fitness report will play a most important part. A like *incentive,* only much stronger, inspires the captain; and the admiral has the world before him. Hence we may dispose of the higher grades for there the *incentive* exists and all's well.

But what *incentive* exists to inspire the junior officer to exert his greatest efforts in the performance of his duty? What *incentive* exists, for example, to make the lieutenant (j.g.) sit up all night in the pursuit of knowledge instead of playing bridge? What *incentive* exists to make him strive with all of his might and main for anything more than only just barely satisfactory fitness reports? What *incentive* exists to make him aspire to anything more than three square meals a day and two pay checks a month? *None,* except his own conscience or the fear of punishment, neither of which is sufficient to extract the best efforts from the average individual in the performance of his duty.

A man's conscience is his only guide. No two are alike nor can they be fashioned after any particular model. Some demand the best; others next to nothing. The average is not good enough or, so as not to hurt anyone's feelings, let us assume that the average is susceptible of improvement. Then how can this be brought about?

What the junior grades need is *incentive,* the driving power of the lash or the bite of the spur to speed up the lagging conscience from within the individual himself. Without it we cannot reasonably expect more than that degree of effort which is the product of self-respect or of conscientiousness or of loyalty or of whatever the thing is that makes us do our duty as we see it in the course of the day's work. And this with little or no hope of reward! There is no reflection on the junior officers whose performance of duty is, in the main, of a very superior quality, more especially considering the fact that the only *incentive* they have to drive them on is that very frail thing —one's conscience. It is not enough, however, to produce from the average junior officer his very best efforts, which is what we must have to maintain our position as the leading navy of the world. We are limited, by international agreements, as to numbers but we are free as the air as to

quality. What we want then is the best possible quality—pure wool and a yard wide.

In order to attain this is it enough, for example, to tell a young lieutenant (j.g.) that unless he works hard and gets good fitness reports he will never be selected for commander? Is this threat enough to make the youngster come across with 100 per cent full power effort in whatever duty may be assigned him? Or again is it enough to lecture him to the effect that he must be a high-minded, hard-working, conscientious, self-respecting officer of indefatigable energy and integrity, etc., if he expects to become a second Paul Jones? He may possibly entertain vague ideas of some day becoming a Paul Jones but at the moment he is concerned only about becoming a lieutenant, so why should he worry about his fitness reports so long as they are satisfactory? Does the man with the 4.0 get any further than the man with the 3.0? How many lieutenants (j.g.) ever expect to become commanders anyway? And as for the ensigns the grade of commander lies wholly without their field of vision! So why worry?

Unless that particular breed of cats—the junior officer—has changed very materially since my day, they don't worry. Wherefore this paper.

Because I believe that its adoption would tend to increased efficiency of the service I venture to suggest the following change in the existing method of examining junior officers for promotion:

That all officers of the grade of ensign, lieutenant (j.g.) and lieutenant be examined for promotion to the next higher grade, *only* in those subjects in which their average fitness report mark, for the grade from which they are advancing, falls short of some predetermined mark—say a mark of 3.5, and that all officers of these grades who have attained this mark be excused from the prescribed examination and in lieu thereof there be substituted an examination of the officer's record to determine his professional fitness for promotion.

As a matter of fact we have already adopted this system in a partial way inasmuch as we have decreed that the possessor of a War College correspondence course certificate may be excused from the prescribed examination in "strategy and tactics." Why not carry it further and put a premium on an officer becoming an expert seaman or an expert navigator or an expert engineer or an expert gunnery officer? I have no desire to belittle the importance of the War College correspondence course but certainly the man who specializes, to the extent of becoming an expert, in seamanship or navigation or engineering or gunnery is deserving of at least as much reward as the officer who completes the War College correspondence course! If, as I have heard hinted at, this is a little scheme to advertise the War College and to make it more popular, why not use the same method to advertise our profession and to make it more popular?

How about the lieutenant who writes a textbook on ordnance and gunnery for the use of the midshipmen at the Naval Academy? Isn't he deserving of even more credit than the officer who completes the War College correspondence course? Or the lieutenant (j.g.) who, as chief engineer of a destroyer, captures the engineering trophy? Or the young officer who proves to his commanding officer that he is an expert seaman? Isn't that sufficient evidence of proficiency in the subject to warrant his promotion provided he maintains an average mark of 3.5 throughout the length of his service in the grade as evidence of the fact that he has not slipped?

The adoption of some such scheme would, in effect, make the service, the examining board and the period of the examination the length of service of the officer in the grade from which he is advancing. It would make each commanding officer a sort of *ex officio* member of the board, and who, when all is said and done, knows an officer's qualifications for promotion better than his commanding officer? The requirements of the law would be fulfilled by having the examining board qualify candidates, those who have attained a 3.5 on their records, and the others by means of the prescribed written examinations.

Furthermore, it would clear the atmosphere of the artificiality which now befogs it and do away with the practice of responsible officers sitting up all night before an examination memorizing probable questions. Examinations are dreaded things even for the brightest man and a chance to avoid them would, I believe, be eagerly sought after. Their principal function, as I understand it, is to make an officer keep up with

the progress of his profession—a sort of periodic housecleaning to throw out the old junk and brush up the new. The scheme I advocate would do more than this for it would, by creating the necessary *incentive,* make an officer keep up to date all the time with his profession and not in spasmodic bursts of enthusiasm for learning.

Such a scheme would, I believe, create the *incentive* in the junior grades which is now lacking and which is so essential in any undertaking, more especially in the naval service where the reward of our efforts is meager to say the least. It would create bigger and better fitness reports with more kick to them even though it might impose some additional work on the commanding officer who has to make them out. It would enable a young officer to present himself before the examining board with a certificate in his hand from his several commanding officers covering a period of some years saying that, in their opinion, the officer in question is fully qualified for promotion to the next higher grade. He will have been tried by the service, whose verdict is, after all, the best available. We are not lenient with each other in such matters, and if he has attained a mark of 3.5 in any or all subjects it is a certainty that he has deserved it. If anything, we are inclined to lean over backwards in our conscientious efforts to be fair and square with each other.

I am not an Anglophile by any manner of means but the British have been in this game longer than we have and they sometimes develop ideas which we could well adopt to our increased efficiency. They found it necessary to create some *incentive* by means of which their officers in the naval service would become proficient in languages so they decreed that for each foreign language that an officer mastered he would receive an extra compensation and it worked beautifully. The foreign language problem is not so acute with us that we need to offer special inducements to encourage officers to master them but what we do need is *incentive* in the junior grades to increase their output in everything to the elastic limit. What we need is greater *incentive* to effort than the dictates of the individual's conscience, for, although the average of that driving force produces *very good,* what we must have is the *best.*

"No exams for me, I've got a 3.8 in everything!"

A grand and glorious feeling!—for the junior officers as well as for the service whose efficiency has been increased by the possession of such high types.

Is it worth a trial?

The First Long Range High Frequency Radio Tests

By LIEUTENANT COMMANDER F. H. SCHNELL,* *U. S. Naval Reserve*

THE author still retains a radio message from Dr. A. Hoyt Taylor, Superintendent of the Radio Division of the U. S. Naval Research Laboratory. This message really was the instrumental beginning of high frequency radio in the Navy. It was telephoned to the addressee by Mr. John L. Reinartz, of South Manchester, Connecticut, at 2:04 P.M., January 10, 1925. Reinartz, himself an enthusiastic experimenter in high frequency radio, had been conducting tests with Dr. Taylor, and it was during one of the tests that this message was sent. It reads as follows: "We are going to send our 54-meter set to the Battle Fleet. Would you consider active duty as Reserve Officer for six months and make trip in charge of this set leaving about March 1?"

I was reconstructing my own amateur station that Saturday afternoon for some tests with European amateurs and the receipt of this message ended further work immediately. All sorts of things were taking place in my mind which was unable to grasp this tremendous opportunity. My first inclination was to answer in the affirmative when my better judgment brought me to earth. I realized, since I was then traffic manager of the American Radio League, an international organization of some 20,000 amateurs, that there were surrounding circumstances which had to be given consideration. It was necessary to place the matter before the Board of Direction of the A.R.R.L., and request a leave of absence for the duration of the cruise. Mr. Hiram Percy Maxim, our president, saw the great opportunity for the radio amateur and without hesitation the Board gave its whole hearted approval.

The Navy Department granted permission to take my own high frequency transmitter and receiver to communicate with amateurs when such communication did not otherwise interfere with regular Navy schedules. As a result of this, the whole scheme was given wide publicity through *QST*, the official organ of A.R.R.L., and the enthusiastic coöperation of the amateur radio fraternity was enlisted. This meant a great deal since thousands of observations could be taken by these amateurs, located in all parts of the world. The purpose of this was to collect as much data as possible through these amateurs who are skilled observers.

By the first of February everything was arranged as to where and when to report. An entirely new transmitter and receiver was built, compact and so arranged as to be easily accessible in case repairs or replacement of parts were necessary. The entire outfit was constructed and tested in four days. A week at Mare Island Navy Yard before joining the fleet at San Francisco, afforded an opportunity to do some experimenting and Commander McCormick, U.S.N., and his assistants coöperated in every way. I was so impressed that I decided then and there, if this was a representation of the coöperation I was to receive, high frequency radio in the Navy was assured, if it was humanly possible.

It was decided to install the high frequency radio apparatus on the U.S.S. *Seattle*, flagship of the Commander-in-Chief, Admiral Robert E. Coontz. This was not appealing to me because it was well known that the flagship would be an extremely busy ship and that the radio would be an important thing. Commander S. C. Hooper, U.S.N., fleet radio officer, insisted on it and it was done as he wanted the tests conducted on the ship he was in so he could see what was happening and thereby better equip himself with sufficient and proper information with which to make recommendations.

*C. F. Burgess Laboratories, Inc., Madison, Wis.

This was the best thing that could have happened and Commander Hooper was right. His attitude was that most anything will work on an isolated tanker, but it may not work in the fleet; that if it will work on the flagship, it will work on any other ship.

Thus welcomed by Commander Hooper and told some of the things that happened on a cruise of this kind, and given much information that was of extreme value, the writer was ready to begin the work of installation of the set preparatory for the trip to Australia.

An attempt was made to find room for the additional apparatus, but with the *Seattle's* regular transmitting room and receiving room already full of apparatus, there wasn't much hope. Here again came that fine spirit of coöperation as Lieutenant John E. Williams, radio officer of the ship, rearranged the apparatus in the main transmitting room and made space for the navy high frequency transmitter. Space was found in the compass house for my own apparatus and this was made the control room of high frequency, and, in addition, control could be taken from main receiving room or bridge.

As there were to be maneuvers in the Hawaiian Islands and the umpires were to be on the *Seattle,* that vessel sailed singly about 2:30 P.M., April 14. Commander Hooper invited me up to "Flag Plot," which, by the way, is where I found sleeping quarters in the form of a transom as the *Seattle* was overcrowded with the umpires.

In a couple of hours we were out the Golden Gate and in open sea. Here is where an entirely new experience descended upon me—I was getting sea-sick but didn't know it *until I lighted a cigarette.* What an awful tasting thing it was! Commander Hooper had left me alone and there I was with a case of sea-sickness and no place to put it. I hadn't the slightest idea what to do, but no one had to tell me—I did it! Of all the descriptions I've heard of how it feels to be sea-sick, none of them fits my particular case and I shall not attempt to describe my impossible feelings. It occurs to me that each individual has his own particular way of getting sea-sick. I know I missed meals for three days and missed sleep for three nights, got completely soaked through and through, uniform, two mattresses and all, with cold salt water, and I stayed right there and liked it. When I finally did manage to get down to the wardroom for a meal the fourth day, I was asked if I had been off on a cruise of my own.

The morning of April 20 was a grand and glorious day for me. The sun was shining like I had never seen it before and there before me was the Moana Hotel and Honolulu—and land. What a sight! There I could see Diamond Head looming up and it certainly said, "Welcome, landlubber!" All this bolstered up my enthusiasm and what remaining energy I had, and as soon as we docked we got busy getting the high frequency radio apparatus into commission.

NRRL was the call assigned for this special radio work. Our first tests consisted in establishing communication with radio amateurs in the United States. For this work a frequency of about 7,500 kilocycles (40 meters) was used. Amateur signals would start coming through shortly after 5:00 P.M., Honolulu time, and would continue until sunrise. The power of NRRL was approximately 300 watts, input, and yet it was not more than two weeks when our log showed communication with amateurs in practically every state of the Union and every Province of Canada excepting the northeastern ones. As many as sixty different amateurs were communicated with in five to six hours of operation. In early May we were at Lahaina Roads, Maui, and established communication with amateurs in Mexico, New Zealand and Australia. Probably the most distant report of our signals at that time came from Mr. S. C. Pleass, who had a high frequency receiver in operation at Johannesburg, South Africa. He sent in report after report, copying everything we transmitted during these tests. Our contact with NKF (U. S. Naval Research Laboratory at Bellevue, D.C.) was very satisfactory and much traffic was handled direct for the fleet.

Returning to Honolulu the last of May, we prepared test schedules for the month of June. NKF, our principal point of contact, made possible daily communication direct with Washington, a thing unheard of on low frequency arcs of twenty times the power. Just before sunrise one morning, I heard the call J-LAA. I answered it and found it to be the call of an amateur station in Japan. We communicated for a half hour without the slightest difficulty because he could understand English.

The many interesting sights witnessed in Honolulu and places visited are as fresh in my memory as they were then and will remain forever. Neither will be forgotten how the "natives" regarded their fortifications and the optimistic way in which they spoke of the impossibility of the fleet taking the islands. They were certain no ship could get within fifty miles of Honolulu and that the attacking forces would be a hopeless loss. One afternoon, in the barber shop of the Alexander Young Hotel, a chap sitting in one of the chairs was looking over the headlines of the newspaper. Perhaps he hailed from Indianapolis. He said to his friend, "Well, Cliff, it looks like the fleet is going to hold off for a few days longer." This was the day before the fleet did attack. Cliff said, "Yes, it might as well hold off for weeks as it hasn't got a chance of getting through the defenses." The other chap was quick with this, "Don't fool yourself, Cliff, some morning you may wake up and find a 16-inch gun sticking in your window and you won't know how it all happened." That very thing happened the next morning—the "natives" were a surprised people.

The five or six weeks in Honolulu were all too short and when the time came to board the *Seattle* and shove off July 1 for Samoa and Australia, I wasn't sure whether I wanted to stay or go. It didn't matter either way. Honolulu entranced me as it did thousands of other people and I am unable to say just what it was.

On the way down to Samoa, our communication with NKF was better than expected under existing conditions. We were maneuvering and radio interference aboard the *Seattle* was quite bothersome. When the Navy's highest power transmitters in the fleet failed to reach out at long range, our high frequency transmitter was furnishing reliable communication direct with Washington and all the way to Melbourne, Australia, this contact was maintained. Most of the traffic was cleared at twenty-five words per minute or faster, with very few repeats on single transmission. Our communication from Melbourne direct with Washington was the greatest distance covered by Naval Communication since the inception of radio. It was not spotty haphazard, but scheduled contact every day.

Commander Hooper gave permission to go to Sydney to purchase some new 50-watt tubes as the ones in use were being punished unmercifully and this gave me an excellent chance to visit amateurs and see their stations. By the way, the Australian government provided transportation for the fleet, theaters were free, as were many other things. Of the amateur stations visited, it struck me that they were not originators, but good imitators of the "American Ham." The "Aussie" is, or was, handicapped by lack of decent apparatus for high frequency work. He was depending upon the American manufacturer for his best parts; this necessitating a delay of months and an additional duty of no small proportion.

While visiting these stations, I would often sit in and operate for an hour or so, communicating directly with radio amateurs "back home." American signals could be logged as fast as I could write them down and signals were of good strength.

Upon returning to the *Seattle* with spare tubes, we felt free to undertake additional testing. Just before dinner one evening I ran into G2NM, the British amateur station operated by Gerald Marcuse of Surrey, England (about twenty miles southeast of London). I called him and he answered, saying he had to be off to business. We arranged a schedule for the next day when he had more time for conversation. According to the best accepted theory, our signals were passing over the North American Continent, the dark period of the night. We verified this through amateur radio operators in many countries. This gave us an opportunity to make many tests. At one time of the day, early morning, signals traveled around one side of the earth and the opposite side twelve hours later. This was checked by the observers. This gave us a distance of 10,154 miles at one time and about 14,000 miles the other—more than half way around the world, but perfectly logical, as measured from Wellington, New Zealand. Mr. Marcuse used his voice transmitter and for ten consecutive nights we listened to his "gramaphone" records.

Our regular Navy traffic was moving smoothly on schedule. Messages were being delivered by amateurs to all parts of the United States. Many times messages going to somebody would be telephoned by the amateur and an answer delivered back on the *Seattle* within five or ten minutes—5,000 to 8,000 miles.

Leaving Wellington, we again visited Samoa and then Papeete, Tahiti—always maintaining communication with Washington. The arrangements for the arrival at Papeete were handled on high frequency a week before we arrived and long before the regular French transmitters could reach the *Seattle*. KFUH, the call of the private schooner, *Kamiloa*, was a mystery to the French officials, who couldn't understand how that little ship could cover such distances with such small apparatus. KFUH was anchored in the harbor at Papeete. While at Papeete, we first received the news that the late Commander John Rodgers, U.S.N., was safe and had been found within a few miles of one of the Hawaiian Islands. This news came direct from Lieutenant Commander A. H. Babcock, U.S.N.R., who operates his private station, 6ZD, at Berkeley, California. It must be mentioned here that almost nightly contact was maintained with 6ZD, through which station passed many personal messages of officers and men of the fleet.

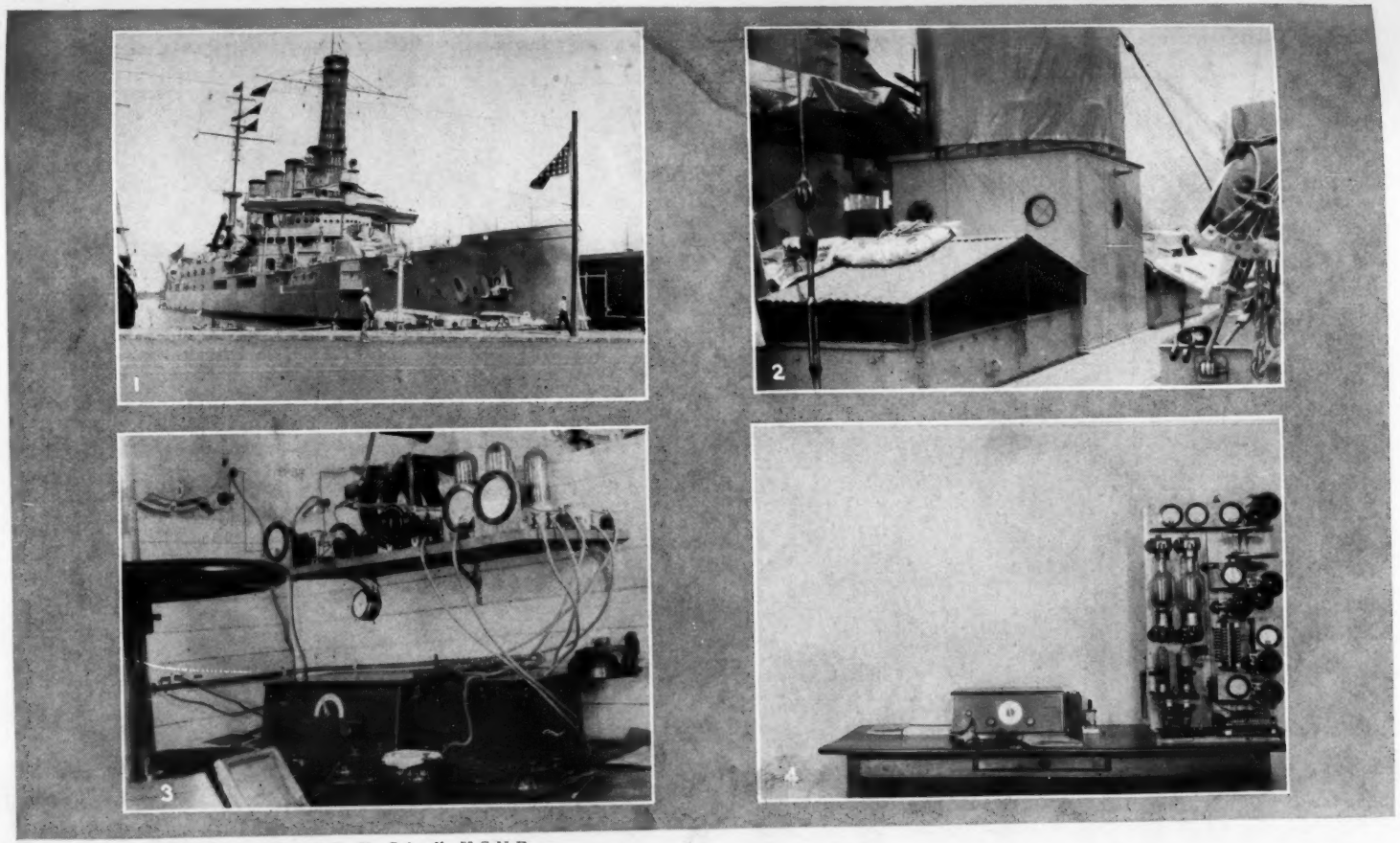
The outstanding station for signal strength among the amateurs belongs to K. Redman, 6CGW, Long Beach, California. No less than 600 or 700 messages passed through his station to friends and families of the fleet personnel. We sailed from Papeete on September 13 and on the morning of September 23, just three days out of San Diego, and while preparing to dismantle my own apparatus, the writer picked up a call from PI-1HR, a station in the Philippines, at Fort McKinley, operated by Lieutenant H. P. Roberts, U.S.A. We communicated for an hour and it was the last high frequency contact. It was a glorious ending as it added one more long distance record to the list.

Communication was carried on with 833 amateurs including United States, Canada, Mexico, Hawaii, England, France, Argentina, Chile, Brazil, Uraguay, Cuba, Italy, Holland, Guam, New Zealand, Australia, Manila, China, Japan, and with the MacMillan Arctic Expedition while we were in Wellington and they were at Etah, North Greenland.

To me it was a most glorious cruise and the most interesting six months in my life. I had the chance to see the Navy at sea, where it is at home. I marveled at the precision-like maneuvers, the perfect coördination of man-power, the quiet and systematic method of issuing orders and the skillful navigating and the magnitude of it all. I have seen the Navy as it should be seen. I believe I am safe in saying that no man in it or out of it can have more respect for or love it more than I do.

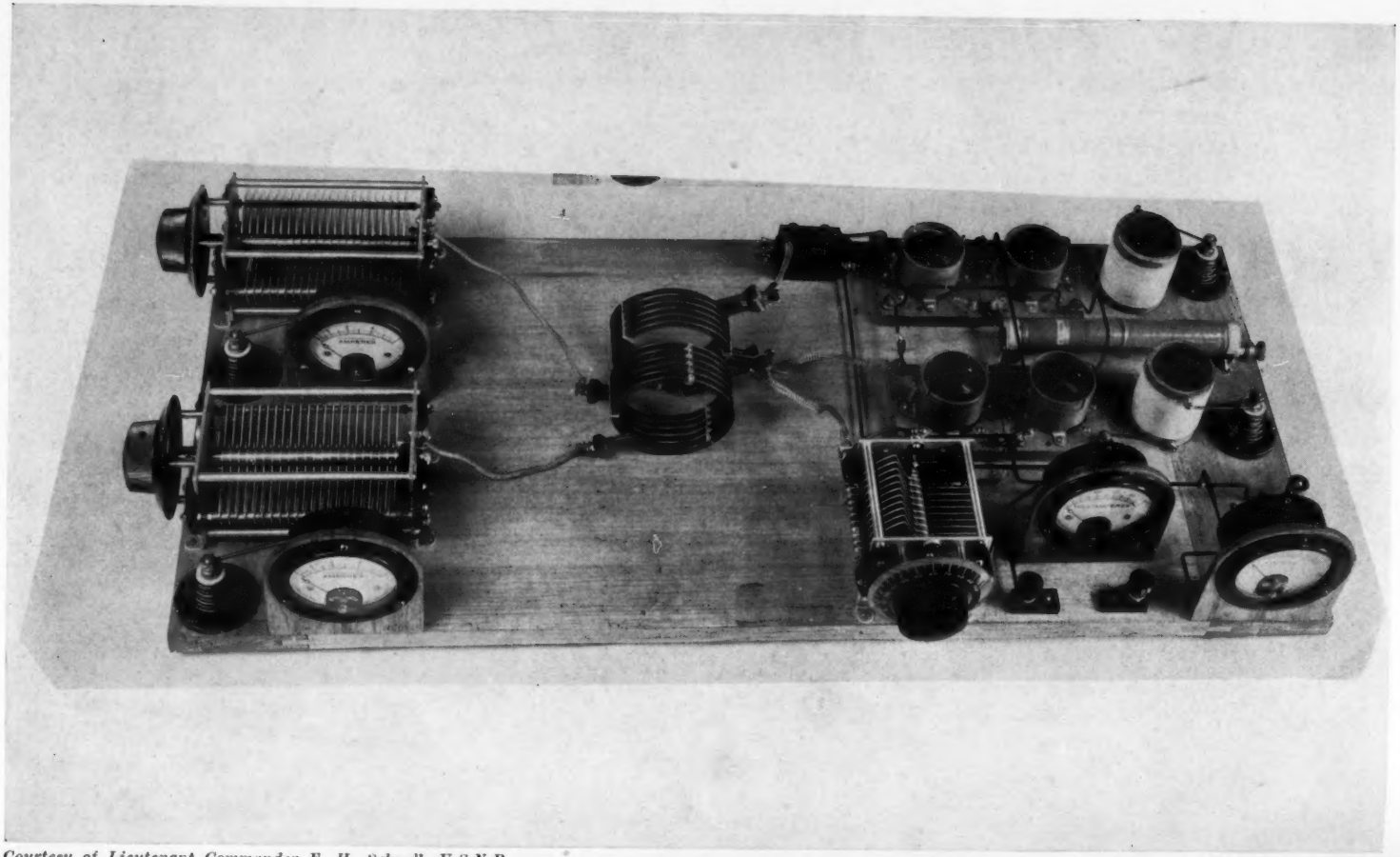
High frequency radio is in the Navy to stay. It is surpassing any other form of radio by leaps and bounds. With apparatus occupying only a tiny amount of space, as compared to the ancient arc (the worst interference factory in all radio), the ships of the fleet are maintaining direct contact with Washington over distances practically impossible on low frequency and with infinitely less power. As I sit here now [Editor's Note.—It was written in June] in my radio room rewriting from notes, I listen to signals from the U.S.S. *Memphis*, now a day out of Cherbourg. Press despatches are being sent direct to Washington because Lindbergh is aboard the *Memphis*. Another high frequency station, probably one of the flagships, is within ten kilocycles of the *Memphis*. This station is calling NPL (Honolulu) and I can hear each of them with the same ease that I might call up the drug store and tell the clerk to send over some ginger-ale to mix with something else that I may finish this now—which I do. Join with me in a toast to high frequency naval radio and those who made it possible, of which Dr. A. Hoyt Taylor is still leading the rest of the world in its development.

The names of Captain Ridley McLean, U.S.N., director of Naval Communications and his assistant, Commander William Glassford, U.S.N., should not be left out of this story as they were most conspicuous in pushing the tests.



Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

1. U.S.S. "Seattle" at Honolulu, Ready to Begin Long Range Short Wave Radio Tests.
2. Compass House—Anything but a Cool Place in the Tropics.
3. Transmitter and Receiver as Installed in Compass House, "Seattle." See page 965.
4. Operating Table of NRRL, the Latter Our Specially Assigned Call Letters.

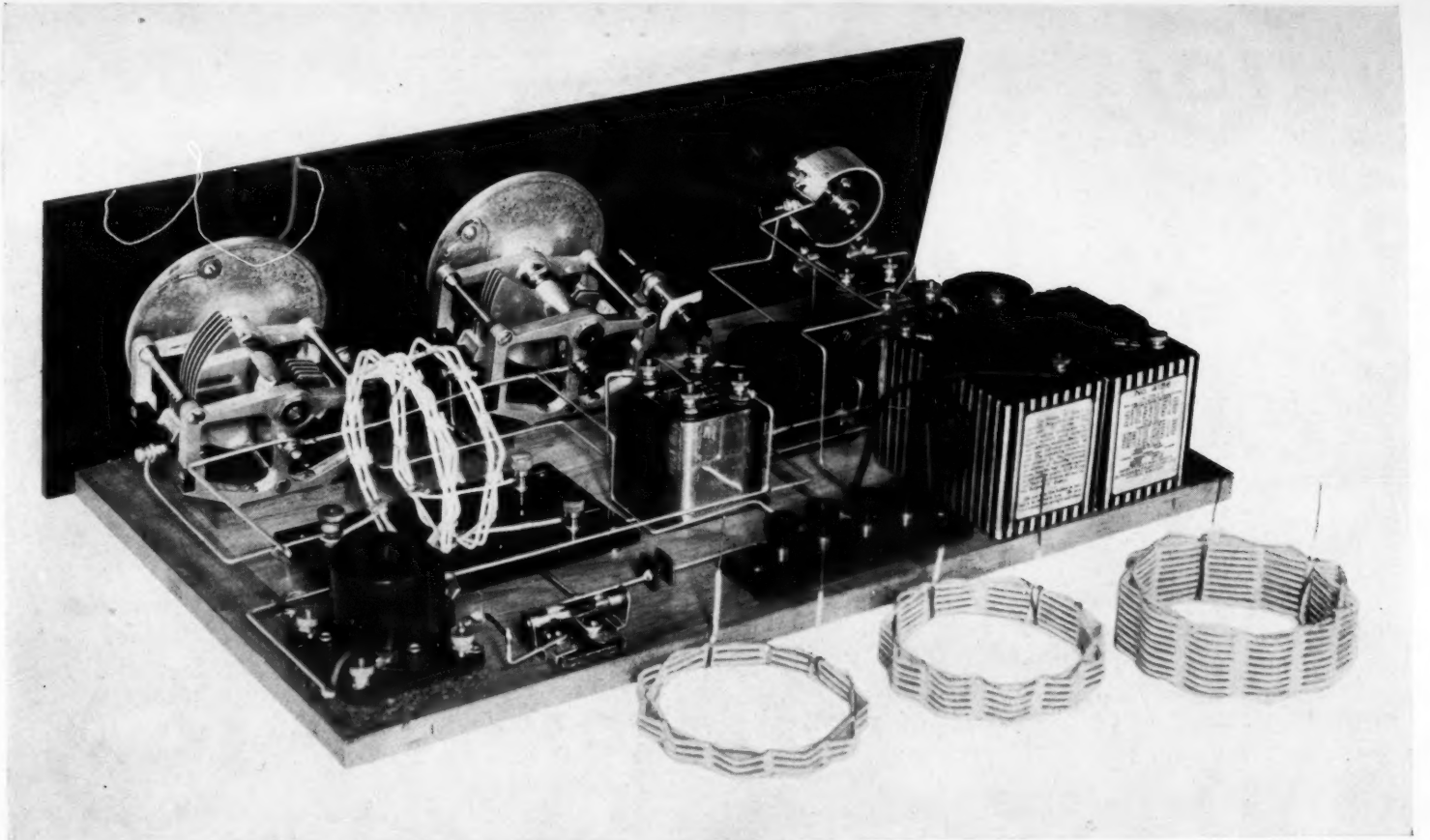


Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

THE TRANSMITTER OF NRRL, TAKEN ON THE AUSTRALIAN CRUISE. FOUR 50 WATT TUBES WERE USED. INDUCTANCES FOR 20 METER OPERATION ARE CONNECTED IN. See page 965.

Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

THE TRANSMITTER OF NRRL, TAKEN ON THE AUSTRALIAN CRUISE. FOUR 50 WATT TUBES WERE USED. INDUCTANCES FOR 20 METER OPERATION ARE CONNECTED IN. See page 965.



Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

INSIDE CONSTRUCTION. FOUR COILS USED, ONE FOR EACH WAVE BAND. See page 965.

Courtesy of Bureau of Navigation, Navy Department, Washington

A "Siva-Siva" Team of Samoan Men at a Fourth of July Celebration, in Front of the Enlisted Men's Barracks, U. S. Naval Station, Tutuila, Samoa

The head-gear of the two "taupo," leaders, is made of human hair adorned with small mirrors, white flowers, colored bird feathers, etc., and weighs from fifteen to twenty pounds. The anklets are of colored leaves.

Courtesy of Bureau of Navigation, Navy Department, Washington

A "SIVA-SIVA" TEAM OF SAMOAN MEN AT A FOURTH OF JULY CELEBRATION, IN FRONT OF THE ENLISTED MEN'S BARRACKS, U. S. NAVAL STATION, TUTUILA, SAMOA

The head-gear of the two "taupo," leaders, is made of human hair adorned with small mirrors, white flowers, colored bird feathers, etc., and weighs from fifteen to twenty pounds. The anklets are of colored leaves.

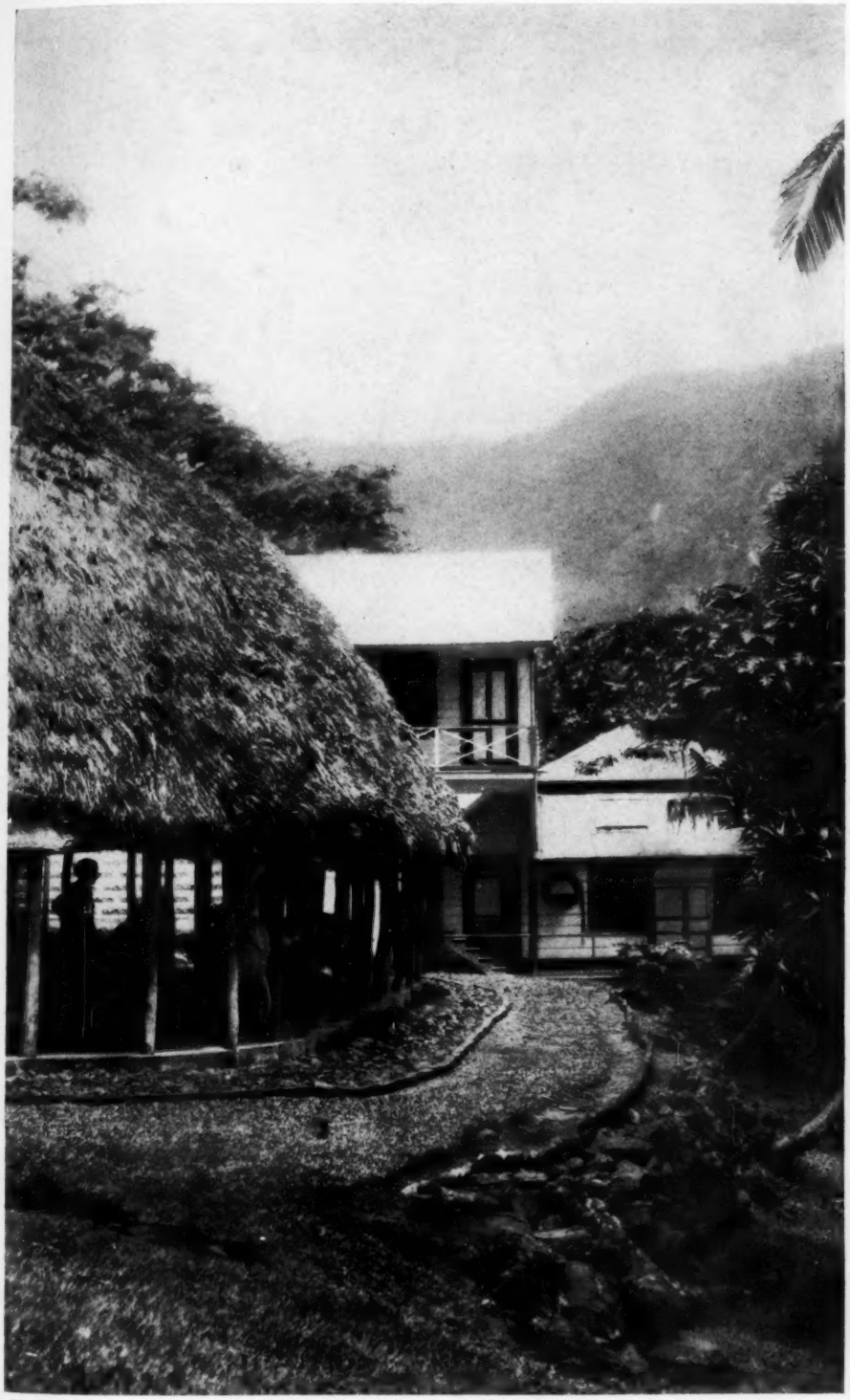
Courtesy of Bureau of Navigation, Navy Department, Washington

A "SIVA-SIVA" TEAM OF SAMOAN MEN IN ACTION

Each dance represents some particular feature such as fighting, working at a particular occupation, etc.; there may be many variations.

Underwood and Underwood

SAMOAN "FALE" OR HUT IN CONSTRUCTION
Each rib is carefully tied together with "cocoanut rope"



Underwood and Underwood

SAMOAN "FALE" OR HUT IN CONSTRUCTION
Each rib is carefully tied together with "cocoanut rope"

Underwood and Underwood

AMERICAN NAVY RUNS HOSPITAL FOR BENEFIT OF SAMOANS

The native population has increased 50 per cent since 1900. In the 1918 "flu" epidemic not a single case occurred although thousands died elsewhere in the South Seas.

Underwood and Underwood

MAKING A "LAVA-LAVA" OR DRESS OF SAMOA

Made from the bark of the "Ua" tree. Painted with extracted juice from tropical plants.

Underwood and Underwood

MAKING A "LAVA-LAVA" OR DRESS OF SAMOA

Made from the bark of the "Ua" tree. Painted with extracted juice from tropical plants.

Underwood and Underwood

THE FINISHED (MODERN) "LAVA-LAVA" AS WORN BY SAMOAN WOMEN

Underwood and Underwood

BREAD MAKING IN SAMOA

Breadfruit is pounded to a pulp and mixed with "taro," the mixture is dried in the sun and later mixed with cocoanut water and baked.

Underwood and Underwood

BREAD MAKING IN SAMOA

Breadfruit is pounded to a pulp and mixed with "taro," the mixture is dried in the sun and later mixed with cocoanut water and baked.

Underwood and Underwood

ROPE MAKING IN SAMOA

Shreds from husks of cocoanuts are carefully woven together making Samoan "afe" or rope.

Underwood and Underwood

NATIVE SAMOAN CRAFT AT MANU'A ISLAND

Taken at the time of the visit of Albert V. Gowen of Cleveland and Chicago in his small 98-foot yacht *Speedjacks,* bound for a 50,000-mile exploration and pleasure cruise.

Underwood and Underwood

NATIVE SAMOAN CRAFT AT MANU'A ISLAND

Taken at the time of the visit of Albert V. Gowen of Cleveland and Chicago in his small 98-foot yacht *Speedjacks,* bound for a 50,000-mile exploration and pleasure cruise.

Underwood and Underwood

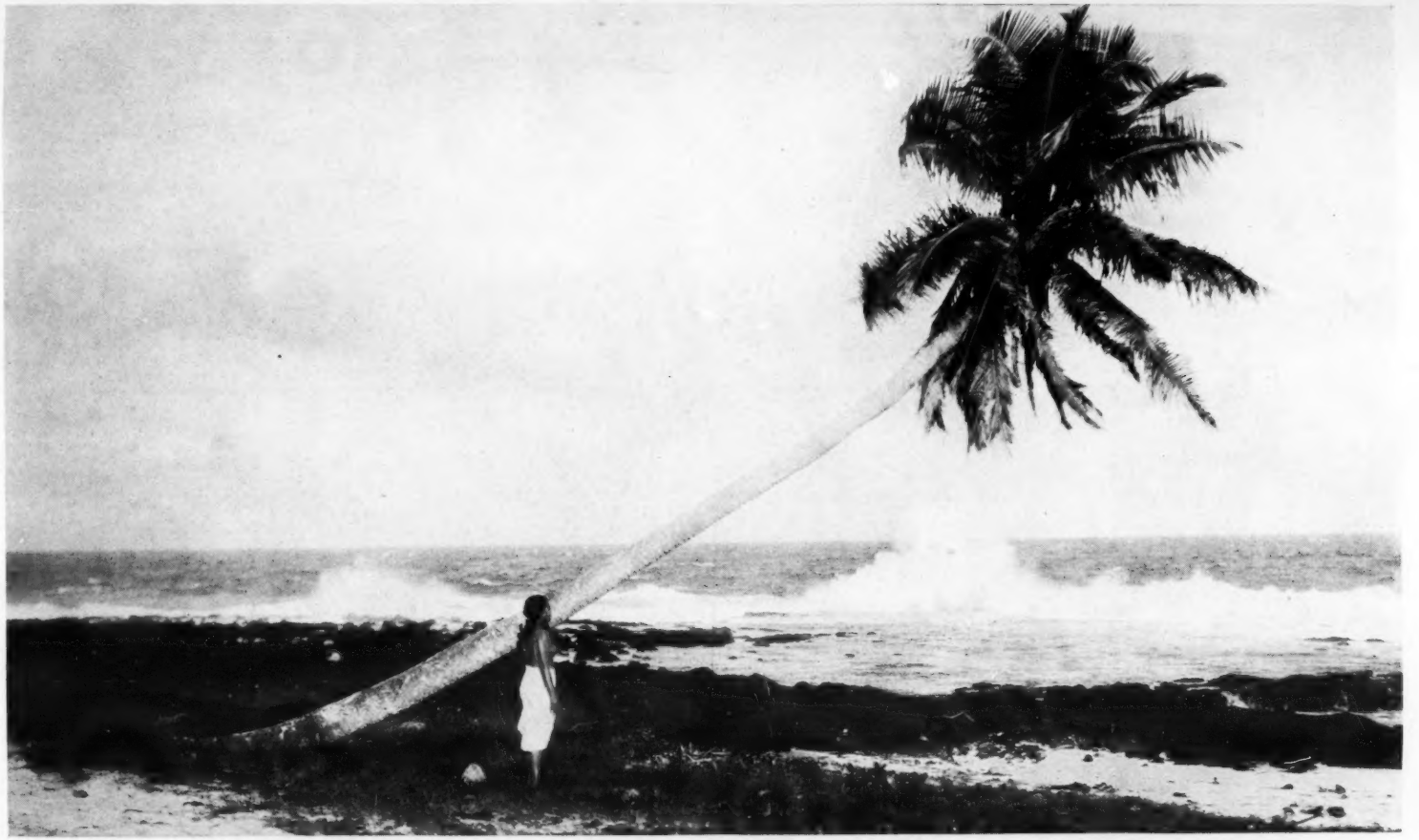
TYPICAL THATCHED TAHITIAN HOUSE, SAMOA

Underwood and Underwood

"IRON BOUND COAST" OF SAMOA
Formations are of lava from extinct volcano, Island of Tutuila—Samoa

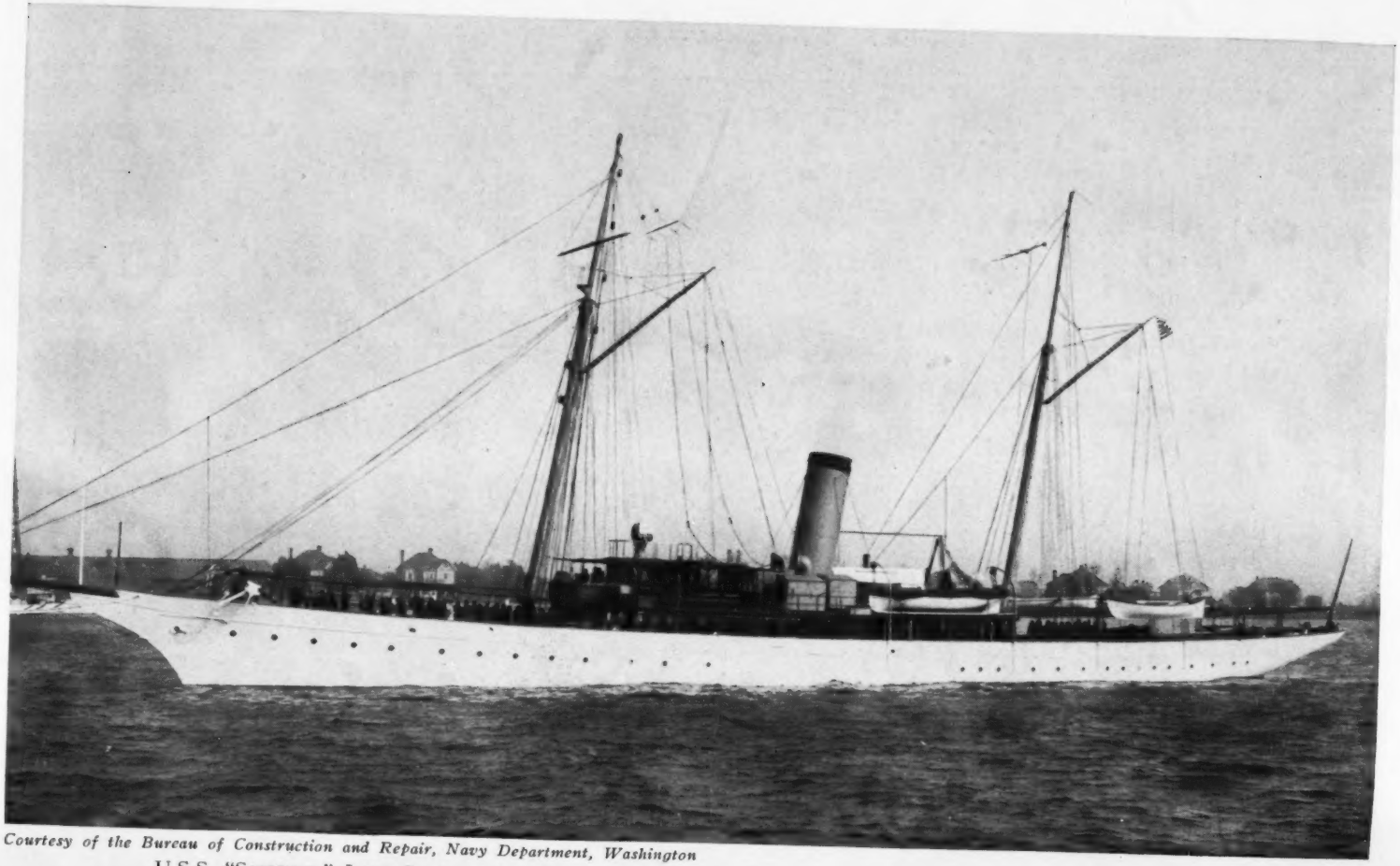
Underwood and Underwood

"IRON BOUND COAST" OF SAMOA
Formations are of lava from extinct volcano, Island of Tutuila—Samoa



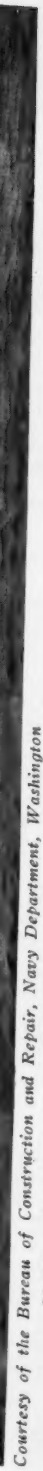
Underwood and Underwood

COAST SCENE—ISLAND OF TUTUILA—AMERICAN SAMOA



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington

U.S.S. "SCORPION," LATE STATIONNAIRE SHIP AT CONSTANTINOPLE AND RECENTLY ORDERED SOLD. See page 969.



Courtesy of the Bureau of Construction and Repair, Navy Department, Washington
U.S.S. "SCORPION," LATE STATIONNAIRE SHIP AT CONSTANTINOPLE AND RECENTLY ORDERED SOLD. See page 969.

The Scorpion Passes

By CAPTAIN W. T. CLUVERIUS, *U. S. Navy*

"U. S.S. *SCORPION* Will Be Offered For Sale."

As I read these words a flood of memories surges through me and carries me back twenty-nine years.

I first saw the *Scorpion* at the Navy Yard, New York, in April, 1898, just commissioned for war. On her staunch steel deck were mounted four five-inch guns, six six-pounders, and two Colts, and she looked every bit the name she was soon to earn—"The Fighting Scorpion." The beauty of the lines of this thousand-ton gunboat and her smart trim caught the eye—here was adventure!

At her gangway I hailed my old shipmate, Yank Holden. We parted in Havana shortly after the good ship in which we served was destroyed. Here he was, all ready for the fight, in a fine billet while I was still seeking a ship whose whereabouts nobody seemed to know or care about—an auxiliary which had been taken over somewhere and then renamed. The commandant of the yard had given me a week to find her.

"Got any vacancies, Yank?"

"Sure," he replied, "one."

I dashed aboard and saw the skipper. "Come ahead," he said, and as I jumped ashore on my way to Washington I could hear him say, "Think of the prize money!"

All next day I buzzed about the Bureau of Navigation trying to tell someone my story. A passed midshipman did not get much notice in those busy times, if ever. But, at last, I got the Commodore's ear and the billet. And so off to the war I went with the *Scorpion,* both of us in our first commissions.

Off Hampton Roads, was the first duty assigned. Stopping everything in and out of the Capes all night long kept us on the jump. How the Bay boats swore as the little busybody ranged alongside and how scarce were Spanish merchantmen!

Finally, we went south with the Flying Squadron to Key West, and then to make a reconnaissance at Cienfuegos where the Spanish Fleet had been reported.

"*Scorpion* take a look," and we steamed bravely in. Not a thing did we see and on our way out to rejoin, we saw the torpedo-boat *Dupont* coming at full speed with orders for the squadron to proceed at once to Santiago—the enemy was there.

Again, "*Scorpion* take a look," and we steamed away eastward making eighteen knots in those days. Upon arrival just before daylight, we sighted a big converted liner lying in front of the Morro. No reply was made to our recognition signal.

"After her," said the skipper, and away we both went across the entrance of Santiago Harbor. We could not fire a gun to stop her as that would open up the whole works ashore and there would have been no story of the *Scorpion* to write. Suddenly, the liner stopped and we overtook her. It was the *Harvard.* "We thought you were a Spaniard," said Cotten, of the *Harvard.*

"We *knew* you were the *Normannia,*" replied Marix of the *Scorpion,* "and a good prize."

That big harmless liner had been lying off the port for nearly a week hoping that someone with guns would come along and be told that the Spanish Fleet was inside.

Back turned the *Scorpion* at full speed to bring the news to the Flying Squadron but, as luck would have it, a blow got us off Cape Cruz and hove us to while our squadron passed us, unseen in the night.

At Cienfuegos, the *Marblehead* gave us orders to return to Key West and we swore roundly.

Two days later, however, we found ourselves steaming along the north coast of Cuba in charge of an important convoy bound for the blockade at Santiago. The *Supply,* filled with provisions, and the *Armeria,* loaded down with ammunition, were in our charge and were told no matter what happened they were to maintain their course and position. These ships were good only

for ten knots, they said, and begged their impatient escort to slow down. We went to general quarters at first sight of anything. We had an active crew, many Gloucester fishermen among them, and they needed occupation. Early one morning, to our consternation we sighted the familiar outline of the *Oquendo* inshore. No mistake. Had not Holden and I just seen her in Havana? After her went the *Scorpion*. Full speed, general quarters, decks sanded down, guns loaded. Nearer and nearer we came. Soon we made out the red in the flag at her gaff. We believed the next moment we would be blown out of the water. One salvo would do it. But not a sign of movement on that ship. We crossed her stern and as we rounded to, the morning breeze unfurled the English colors to our wide-eyed gaze. It was the *Talbot*. Gosh! Her watch officer, leaning languidly over the bridge rail, bid us, "Good Morning," as the *Scorpion*, with full rudder, turned to rejoin her ten-knot convoy, already out of sight ahead.

"Well, we could a' fixed her anyway," said a voice in the fireroom ventilator.

The next night, we opened fire on a dark object on the port bow. In no other war in history were so many dark objects encountered. This one disappeared and we ceased firing for ten minutes when it was sighted again close aboard. On went our big searchlight and the fire was reopened. Preston, with the forward five-inch, went over; I let go a dozen six-pounder shots through her rigging; and Holden, dropping his sights, misfired. Well he did. Almost simultaneously we recognized the *Supply* of our own convoy who escaped being sunk by one misfire. Evidently she had run amuck in our early firing, possibly our own variegated courses caused her some distress! Not a soul did we see on her deck. One head was stuck out of a forward port in response to our hail to her to take proper station. Our hearts had certainly sunk low on this initial engagement of ours.

Just as we had returned to normalcy, as they say now, we sighted a large vessel to starboard with all lights burning and bearing down upon us with a bone in her teeth. What next! For a moment we were sure she would cut us down forward and our crew, still fully armed, dashed aft. Then it was apparent that she would cut us down amidships and the crew parted neatly in the middle. Suddenly we shot around her bow in attempt to clear when she crashed into our stern, lifted us out of the water aft, and dropped us with a dismal thud, and disappeared into the night. When I picked myself up from under a gun where I was entangled with sword and pistol and life preserver, I noticed the *Panther* on our port quarter asking if we needed help. She had struck us square, cutting off our rakish fantail neatly just abaft the rudder and screws, but no serious harm was done. On board that ship were all the marines destined to make the first landing in the Island of Cuba on the morrow. She, too, had been looking for her escort, who was possibly shooting up "dark objects" elsewhere.

However, the marines did take Guantanamo Bay the next day "according to plan" and we did reach the blockade on time. There the *Brooklyn* hurriedly built a new rail across our stern before we took up our night vigil on the blockade. We rolled and pitched on the western end of that semicircle for a month, enfilading rifle fire between the *Brooklyn* and the shore by day and steaming back and forth across the blockade on the vidette line at night. Readily do I recall how we held our breath as we passed through the rays of the battleship searchlights trained on the harbor entrance every moment of every night. And how at daylight, as we fanned out from the close-in positions, the Spanish batteries opened up on us all. Now and then was a demonstration made against the batteries. The blockade eventually became most monotonous, we welcomed any change. Once we were sent to the eastward of the Morro to silence a blockhouse at Aquadores and to receive our baptism of fire. They opened first. Our first shot brought down the flag of Spain on that blockhouse and the proud pointer of that gun never got back to earth again during the war. I expect he still tells the story to his shipmates on George's Bank.

Occasionally we were allowed to go to Daiquiri for drinking water. Honestly, that is what we went for. Of course, we learned of the delightful beverage concocted by the Englishmen superintending the iron mines there. But that is another story. Our men were pleading to go ashore at Santiago for a swim or to buy bananas or anything! They said that the *Vixen* did. Not even the nocturnal bombardments by the *Vesuvius*,

with her gun-cotton shells, could keep us interested as we lay alongside of her to protect her as she fired.

Finally our chance came. "Go down," said the Admiral, "to Manzanillo and shoot up two gunboats that are giving us trouble there. You will meet the *Hist*, the *Hornet*, and the *Wampatuck* off Cape Cruz. It ought to be a nice party." Full speed to Cape Cruz and there we saw the *Osceola*, an armed tug.

"Where are the rest of them?" asked Marix.

"I haven't seen anybody," replied Purcell of the *Osceola*.

"Let's go anyway," said Marix, and that afternoon, ready for battle, we steamed rapidly in between the keys which made the harbor of Manzanillo, sounding as we went. The regular channel was mined.

Never have I beheld so peaceful a scene. Stretched before us was the water front crowded with merchant ships and not a sign of a gunboat. Nothing looked simpler, then, than to steam along the wharves, cut out the best looking Spanish steamers for the *Osceola* to tow, keep the town under our guns while doing it, and depart from that place towing our wealth behind us.

The *Scorpion* steamed past a small buoy close aboard when pandemonium descended upon us. The whole water front from the blockhouse to the northward across the Plaza to the southern blockhouse all opened fire, and behind us, riflemen on the keys joined in the party.

For twenty minutes we gave them all we had. So did they. Our side was peppered with small shot. Then several gunboats previously obscured steamed out to meet us, landing one shell square in our galley, breaking up housekeeping, and another on the forecastle where a reserve ensign, a newspaper man from Chicago, nearly had his hand burned off grasping a hot fragment for a souvenir. This was our only personnel casualty. Never had we heard such whistling as when the "highs" went over us. They were positively annoying.

"I have had enough," sang out the *Scorpion*. "Same here," said the *Osceola*.

"Turn 18" took us one second and we must have cleared those keys, outward bound, at twenty knots. Outside, we caught our breath. The first retreat of the war was over.

"Gee, those ain't the same Spaniards we seen before," said the philosopher down the fireroom ventilator.

We were driven out of Manzanillo on July 1. The *Osceola* was sent to Santiago for help, for we didn't intended to give up the job. The *Scorpion* established a blockade of the port and a merry time was had guarding the entrances and chasing all craft that appeared from any direction. Our first capture was a refugee schooner bound for Jamaica and netted us a score of men, women, and children, and a copy of the local newspaper. From the latter we read that the day before our entry, the gunboats we had expected to find at Cape Cruz, having decided not to wait for us, entered the port and had an hilarious time. Naturally, the Spaniards were ready for us. Our two little ships were described as large Yankee cruisers. From another prize we learned of the escape of Admiral Cervera from Santiago and we hoped that the *Osceola* hadn't been run over by the fleeing Spaniards.

We made so many captures that it became necessary to establish a base. This we did at the deserted village of Guaybal, a few miles south of Manzanillo. The prizes were anchored and the passengers were quartered ashore in what soon became a model town presided over by our militant surgeon. The only objection that he had was that it took him from what he considered his paramount duty: that of captain of our sharp shooting riflemen who lined the rail in every engagement! Every day we had cutting-out expeditions to chase craft which tried to escape over the shoals. Before long, every one of the ship's boats was armed to the guards.

On the evening of July 17, reënforcements arrived and a conference of war was held on board the gunboat *Wilmington* flying the broad pennant of the Senior Officer Present. The force consisted of the *Wilmington*, *Helena*, *Hist*, *Hornet*, *Wampatuck* and *Osceola*. This array, together with the *Scorpion*, gave every indication of a big time in store.

Promptly at daylight on July 18 we proceeded to the attack of Manzanillo. The two larger ships entered the northern channel, three others from the south, and, as before, the *Scorpion* and the *Osceola* stood in between the keys. Fire was opened simultaneously on the blockhouses, on the trenches across the Plaza, and on five Spanish gunboats which advanced toward us. For nearly

four hours the battle raged and at the end of that time there wasn't enough left of the enemy's material of which to make a walking stick. We heard later that the *Wilmington* had the signal to cease fire flying for an hour before any of us saw it. Our casualties were slight, no one even wounded, but the enemy did not fare so well. If my memory serves me right, we all of us received the equivalent of one month's pay as head money for that day's work. That is, so much for every member of the crews of the Spanish gunboats. Alas, the rules have since been changed!

As soon as this party was over, the force was scattered and the *Scorpion,* with her consort, towed the Spanish prizes she had collected before the battle, to Guantánamo Bay. I think we acquired another month's pay when their value was appraised. The most important of all, at least to us, was an immense crate of fresh, live chickens we had captured on a lighter. Among the merchant vessels destroyed at Manzanillo was the *Purissima Conception* which had succeeded in evading all the American ships and had reached Manzanillo with the pay roll of the Spanish garrison and its defenses a few days before any of us had arrived.

The *Scorpion* later assisted the Army to land in Cuba and the echo of her five-inch shells resounding against the rocky hills of Daiquiri is still in my ears. It was a big frolic and there was gaiety and laughter on all sides. Many boats filled with the troops had been lowered from the transports without any oars in them. Naval craft were scurrying around the harbor picking them up and towing them in. Above all, was the song of the Ninth Cavalry as these dark troops went merrily by singing, "There'll be a Hot Time in the Old Town Tonight."

After Santiago surrendered and hostilities ceased, the *Scorpion* was engaged for a month or more in assisting in the salvaging of the Spanish cruiser *Maria Theresa,* which had grounded on the day of the battle shortly after emerging from the harbor. This ship was floated and the *Scorpion* joined in the triumphal convoy to Guantánamo Bay where the work of making her tight proceeded. Due to the insistent demands from the States she started north around Cape Maysi on her long tow northward. This was the last we were to see of her as that expedition failed when the *Maria Theresa,* cut adrift in a spell of weather, was later stranded in the Bahamas. The *Scorpion* then went to Havana in connection with the Evacuation Commission, flying the flag of Admiral Sampson, a member. We are always a generous enemy and plans were being made to send the Spanish troops home from Cuba at our expense. The *Scorpion's* duty was to convey the Army engineers to possible locations for building wharves to receive the transports.

We were getting tired of it all by this time. The fleet had gone home months before and we were left to wipe up, as it were. The Army people, however, were delighted, they said, to have our help and intended using us indefinitely. Very few trips through the ground swells on that north coast of Cuba convinced the engineers that they needed a more stable platform if they wanted to keep their minds on their work. Our five-inch battery frequently rolled the decks under and our guests partook of both work and food very lightly.

In early December, we hailed with delight the arrival of our relief, the cruiser *Topeka,* and the *Scorpion* lost no time pointing her nose northward across the Straits of Florida.

It may be rememoered by some old timers that the winter of 1898-99 was a serious proposition. No sooner had we reached the latitude of Jupiter Inlet, homeward bound rejoicing, than a norther descended upon us. We rode it out and after a few weary days shaped our course directly across the wide expanse of water for Hatteras. Soon another gale caught us and left us with just enough fuel to limp in to Port Royal Sound. There we filled our bunkers and started off again with hopes still buoyant.

In all the succeeding years I have disliked Frying Pan Shoals most intensely for it was in this vicinity that the *Scorpion* caught it again and no mistake.

We had been hove to for three days doing fairly well, huddled together topside, if wet clothes and cold seas can be called doing well. As for food, we lived on bread and jam. I will never forgive the caterer for the amount of Dundee jam he had laid in before we went to the war. I never want to look the plaid label of those jars in the face again. In fact, we dumped nearly a hundred of them overboard with our first glimpse of Sandy Hook.

Without warning, off those shoals, a heavy

cross sea struck us with such impact that a turnbuckle in the steam steering gear carried away, the improvised stern which the *Brooklyn* had built was destroyed, and hand steering wheel went by the board, and that sea swept everything before it.

Like a flash the ship fell off into the trough, and a sea went over her pouring down her ventilators and flooding the fire rooms. One more would put the fires out. The engines were rung ahead full speed, which, if literally carried out would have wrecked them. The sea anchor was then let go forward. I dashed to the fire room hatch begging the men to stand fast. Holden, with great presence of mind, called for volunteers. He forged his way aft through the water which filled both gangways, snatched the halliards from the flagstaff as it was driven past him in the flood and, further aft, dragged out two iron jacking bars from beneath a gun mount. With his men he finally reached the wreck of the hand steering wheel whose bronze hub was still intact. Quickly the jacking bars were lashed with the halliards to the hub and two Gloucester fishermen, seizing them, put the helm down. Like a top, the *Scorpion* came up head to sea and thwarted the sinister purposes of a huge wave about to break over us.

For twenty-four long hours we steered from aft with men lashed on top of the deck house to pass the word from us on the bridge to those men at the wheel. Just as dark was descending the next day, a sea came over forward and the word was passed to me from aft that the ship couldn't be steered. The sea that had come aboard had crashed through the fore hatch and filled the hold. Down went her head and up went the rudder nearly out of the water. The engine room was ordered to start the pumps. Nothing doing. We discovered that the lead suction piping through the coal bunkers had been consumed by the bunker fires which had menaced us throughout the cruise. All hands, officers and men, frantically bailed the fore hold with buckets all night long. With sunrise came release. The gale was surely blowing itself out and, by afternoon, we were able to drag our way back into Port Royal Sound where the steering gear was hurriedly repaired and we were able to borrow some dry clothing and get some fresh food. Our quarters and everything below had been afloat for many days.

Again, undaunted, we started north. Surely all was well now. But fog—cold and damp— was waiting for us at the lightship outside. For one long week, we felt our way along the coast. Never will I forget the cheers of our men when pilot vessel *Scotland Lightship No. 8* appeared out of the fog. We knew that our journey was ended.

When we reached an anchorage at Staten Island, the fog had lifted. With the anchor we dropped in our tracks—all in. But wait —only for a minute this respite! The flagship *New York* appeared at the Narrows, five days from Havana, with signal flying— "*Scorpion,* get out of our berth."

In January, 1899, we bid the *Scorpion* goodbye at the Navy Yard, New York, as several of us transshipped eastward through Suez to take our part in the Philippine game.

Two years later I saw the *Scorpion* again, smarter than ever. She was then the dispatch boat of the Atlantic Fleet and always ready for a call. Still later she was on survey duty and, in 1908, went to the Mediterranean, where this splendid little ship has operated continuously in all waters of Europe. The story of her service before and after the Great War, flying the flag of Rear Admiral Bristol, who was in effect an international ambassador to Turkey, should certainly be told. Interned and harassed at Constantinople, she continued on the job. The outstanding work of an American flag officer in the interests of humanity in the Near East will long be remembered and the *Scorpion* bore his flag honorably.

Now her day is at an end and, if she can weather the Atlantic, she is coming home. Secretly I hope that not a bid will be received if this faithful old gunboat is placed on sale. She deserves a better fate than conversion into a scow.

"They say this here old hulk was a war boat once," observed the longshoreman.

"'Er? Don't believe it, so help me," replied the night watchman as he spat on the deck where man-o'-war's men have proudly trod in their country's service.

. . . . . .

Well, I would a little rather you didn't get home than *that,* old timer. Anyhow, you did your trick. We'll all go soon and be forgotten. But not your record, *Scorpion,* and not your one long commission which proudly I began with you that April day away back in ninety-eight.

Reconciling Recent Static Research *with* Various Theories *on* Atmospheric Pressure

By LIEUTENANT E. H. KINCAID, *U. S. Navy*

THE writer has had opportunity at sea to study static with relation to the atmosphere since the spring of 1924 on board the U.S.S. *Kittery*. During 1926, these observations were made with the assistance of the radio compass. The research originally started on board the *Kittery* is now being continued by the Hydrographic Office in collaboration with the Bureau of Engineering, Naval Communications, and the Bureau of Aëronautics.

The purpose of this article is, primarily, to show that static has sufficiently definite relationship to the distribution of the atmosphere, as plotted on the daily weather map, to enable one by proper observations, to make use of static in weather forecasting, and to make use of our present knowledge of atmospheric distribution and movement in static forecasting.

This problem must be considered from two different viewpoints.

The first is by making use of instantaneous static intensities without reference to any directional properties that static may have. This might be called plotting the highs and lows of static such as we now plot highs and lows of barometric pressure. The first experiment conducted on board the *Kittery* for the Navy Department before the introduction of the direction finder was on this principle.

Considering that a definite relationship is established between atmospheric structure or changing structure and static, facts ascertainable concerning static from one or more points will be of value in forecasting weather and our knowledge concerning development and movement of atmospheric conditions will assist in making static forecasts. Add to this knowledge what directional properties static is found to have and we begin to realize the possibility of the value of a static observation to a condition remote from the station making the observation. It is this latter feature that will prove of greatest advantage to the mariner.

Two examples are given of well-known meteorological conditions with contrasting types of pressure distribution. One is a well formed homogeneous high which covers the West Indies, the South Atlantic and East Gulf States, and the ocean area adjacent thereto.

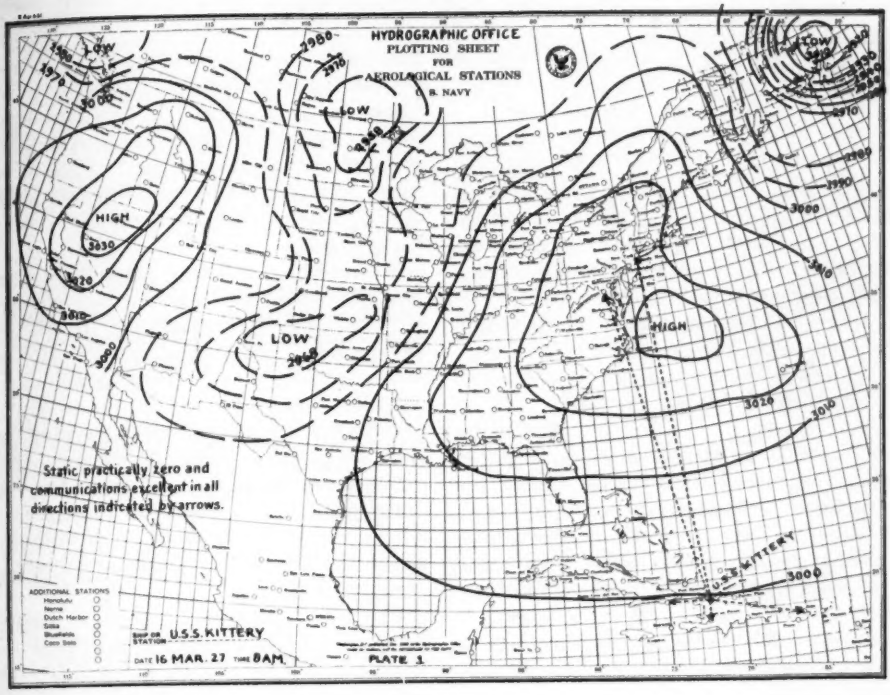
Figure 1 illustrates the static free and excellent communication conditions attending this high. The ship at the time off Cap Haitien, Haiti, on March 16, 1927, with a two-kilowatt set had no difficulty in communicating with Port au Prince, Haiti, Guantanamo, Cuba, San Juan, Porto Rico, Arlington, and New York.

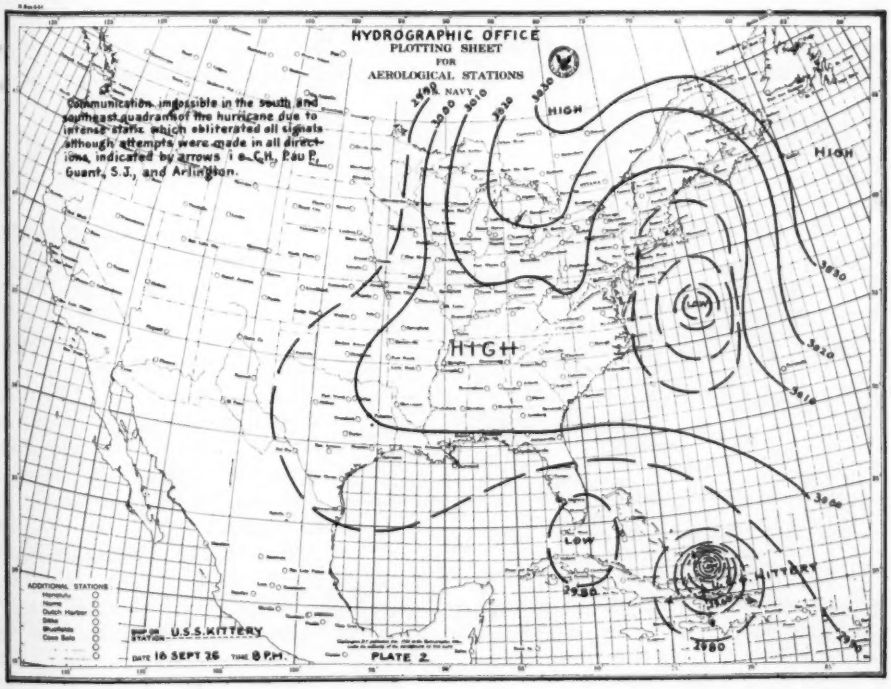
Figure 2, the other example, is of the same geographical area but with a hurricane, the most intense type of low (except tornadoes) occupying a part of the same area. The low in this case is the historical Miami hurricane shortly after it had passed over the devasted Turks Island. The position of the observer was the same during the observance of both states of weather and attendant radio reception conditions, that is, off Cap Haitien, Haiti, in this case on the evening of September 16, 1926.

In the former, the high, static was practically zero and reception excellent in all directions over long ranges within the high.

In the latter, the low or Miami hurricane, reception was impossible although attempts were made to communicate with all stations indicated by arrows in Figure 2, namely, Arlington, San Juan, Guantanamo, Port au Prince, and even Cap Haitien, which was only forty miles distant.

Our steering gear broke as we were entering Tortuga Channel to obtain a better lee, and had an SOS been necessary, it would have been drowned out by the intensity of


HYDROGRAPHIC OFFICE
PLOTTING SHEET
FOR
AEROLOGICAL STATIONS
U. S. NAVY
HIGH
LOW
HIGH
LOW
Static practically zero and communications excellent in all directions indicated by arrows.
U.S.S. KITTERY
ADDITIONAL STATIONS
Honolulu
Nome
Dutch Harbor
Sitka
Wiuiliamis
Coco Solo
Base on U.S.S. KITTERY STATION
DATE 16 MAR. 27 TIME 8 AM.
PLATE 1


HYDROGRAPHIC OFFICE
PLOTTING SHEET
FOR
AEROLOGICAL STATIONS
U. S. NAVY
Communication impossible in the south and southeast quadrant of the hurricane due to intense static which obliterated all signals although attempts were made in all directions indicated by arrows i. e. C.H., Pau P., Guam, S.J., and Arlington.
HIGH
HIGH
HIGH
LOW
KITTERY
ADDITIONAL STATIONS
Honolulu
Nome
Dutch Harbor
Sitka
Wiuiliamis
Coco Solo
Base on U.S.S. KITTERY STATION
DATE 18 SEPT 26 TIME 8 P.M.
PLATE 2

the static. Fortunately, the *Kittery* is a twin screw ship, and we used our engines until the steering gear was repaired.

Here we deal not with theory but with facts, namely, (1) that on one occasion static was terrific and the observer was within the 29.60 isobar southeast quadrant of a hurricane, and (2) on the other occasion the observer was within a homogeneous high and static was practically nil.

The writer wishes to ask what this and similar phenomena would seem to indicate. To the observer in this case the same relative situations have recurred so often that he is of the opinion that highs are relatively static free and lows are attended with static somewhat proportional to the intensity of the disturbance. This seems to hold good from troughs of low pressure to hurricanes and from poorly defined highs with mild static to great homogeneous highs with practically no static.

This high had traveled across the United States from the Pacific states where it was central on March 11. We have every reason to believe that the same relative good reception condition had identical motion of translation.

The rate of the motion of translation of highs are shown in many publications of the U. S. Weather Bureau and authors of meteorological works. (See Figure 14.)

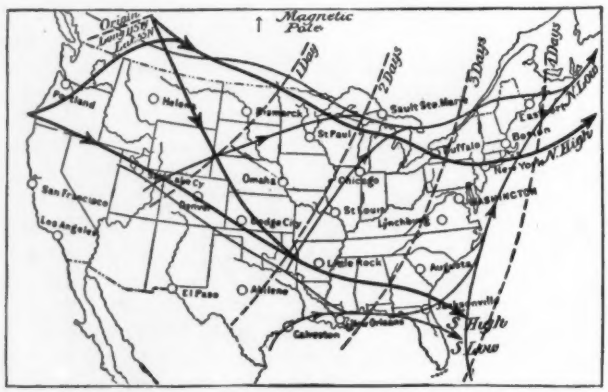


FIG. 14—THE BIGELOW SYSTEM OF STORM TRACKS ACROSS THE UNITED STATES

With the same accuracy as highs are now used in weather forecasting they can be used in forecasting the negative information concerning static conditions.

The low, or Miami hurricane, had traveled at the rate of about 300 miles per day from the doldrums well out to the eastward of the Lesser Antilles, possibly near the Cape Verde Islands. It is a certainty that this area of heavy static and impossible communication conditions had traveled at the same relative position to the hurricane and at the same rate of 300 miles per day. (See Figure 4.)

Assuming that these things are true and that highs and lows and our knowledge concerning their development disintegration, and motion of translation are to be the basis for our static forecasting, we need next to study the structure of highs and lows with a view to locating that part of each which may under the most general conditions be expected to give the greater amount of static. We also want to know where within the high and low to expect the minimum amount of static for that particular structure.

In the Miami hurricane, static was stronger in the southeast quadrant than in the west and southwest quadrants. In general, the eastern half of lows will be more heavy in static than the western.

On March 21, when the high mentioned above had moved to the eastward until the *Kittery's* position was in the southwest quadrant, static increased steadily.

In highs it has been my observation that the center has the mildest static, the southeast quadrant less than the southwest, the northeast less than the northwest, especially is this true near the edge of the structure.

Highs of different origin and hence different structure will have different static conditions associated with them. A Pacific high, deep but of limited area, will have a different static association from an Alberta high which is shallow but of great magnitude. And similarly lows of different origin will have correspondingly different static attendant thereto.

The above facts can be reconciled with results obtained by many who are studying static with the view of correlating it with the atmosphere.

A few observations of others who have studied this subject abroad may be added here:

Abstracts of Papers on the Meteorological Relations of Atmospherics

In June, 1923, the Council received a letter from Mr. R. L. Latcham, of the cable steamer *John W. MacKay,* Nova Scotia, calling attention to the possibilities of using, for the purpose of weather forecasting, observations of the character of those naturally occurring electro-magnetic waves, called atmospherics, which are so familiar to all wireless listeners.

It will be seen that very acute divergencies of opinion exist as to possible relations between the intensity of atmospherics on the one hand and most of the phenomena definitely recognized as "meteorological" on the other. There is an overwhelming consensus in favor of the obvious correlation with thunder, moderate agreement on the correlation with convective processes in the absence of reported thunder, but beyond this point, the evidence is mutually contradictory. Reasons for this are not difficult to assign. It is established beyond doubt that the range of reception of atmospherics may reach one or two thousand miles, it is most probable that the range frequently, if not usually, attains the length of the earth's semi-circumference. Comparisons between received atmospherics and local weather will therefore, in part, be a comparison of the weather of a parish with the electrical phenomena of a hemisphere. Moreover it is still impossible to find a scale and a classification for the intensity and character of atmospherics which shall be generally acceptable, unambiguous, and capable of assessment by the average observer. The Beaufort of atmospherics is not yet.

Nevertheless, the evidence that the atmospheric was well, if rashly, named is accumulating rapidly, and the summaries of the most recent work show that the location of "cold fronts" by radiotelegraphic observations on atmospherics is an established possibility.

R.A.W.W.

Machines are now in existence which can measure or reduce static to standard units. Why not then make the Transmission Units Scale the Beaufort of static intensities?

Most of them seem to have correlated static with a local condition. I am trying to show how those local conditions are carried along with the general drift of the atmosphere and how static from them can be used in weather forecasting.

I have listed the above facts in this particular manner in order to show how much can be forecast concerning static once its

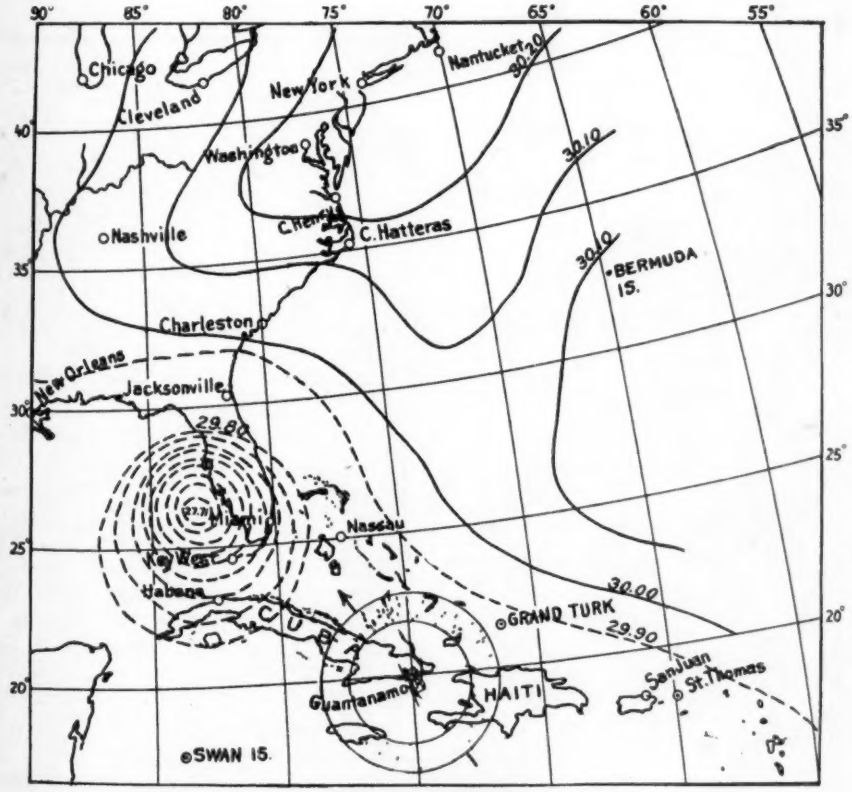
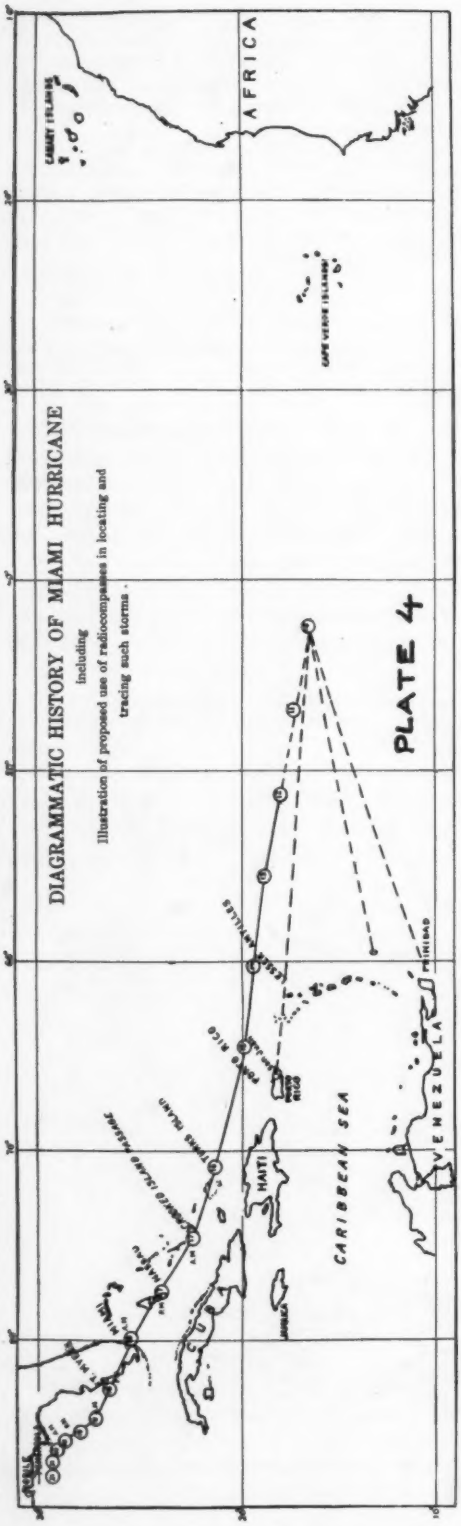


PLATE 5



EXTENDING KNOWN PATH OF MIAMI HURRICANE THROUGH DOLDRUMS TO EASTERMOST BREEDING PLACE OF HURRICANES. KNOWN PART OF PATH SHOWN BY SOLID LINE.

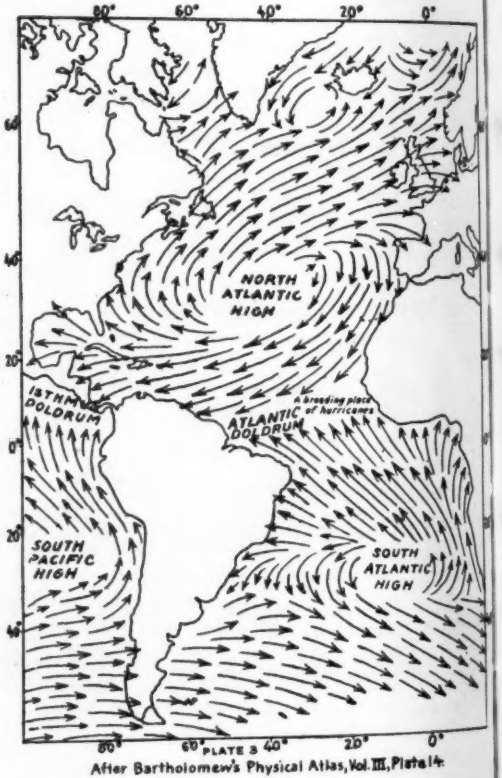
relationship to high and low structure is well established. From our knowledge of the development and motion of translation of highs and lows we have the basis of a static forecast which will be enhanced by an instrument which will make use of the directional properties and intensities of static.

TRACKING THE MIAMI HURRICANE

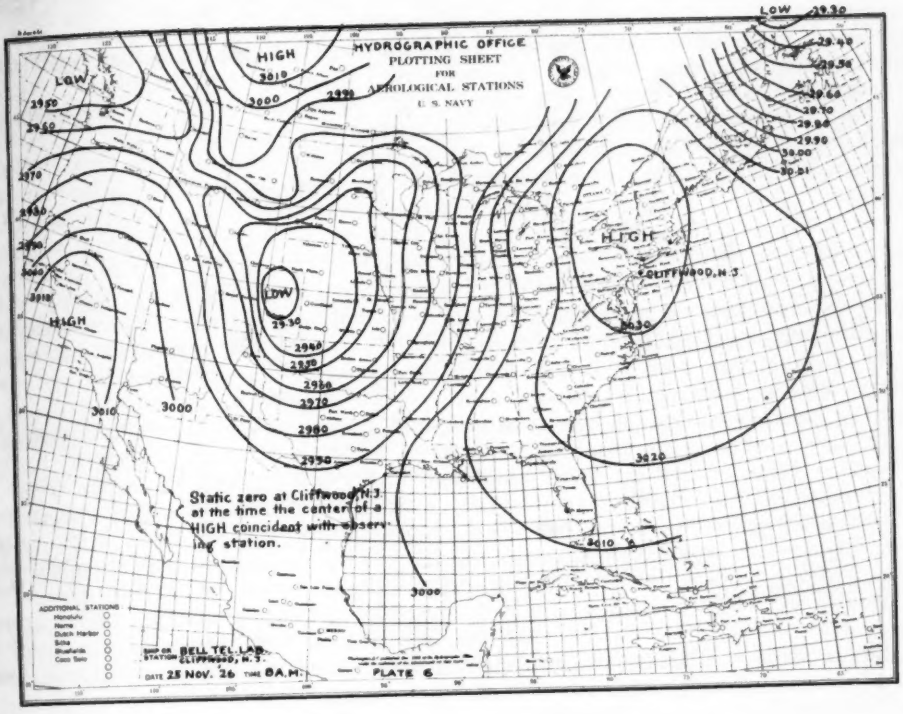
Plate 5 shows the Miami hurricane as it was passing over the Florida Peninsula.

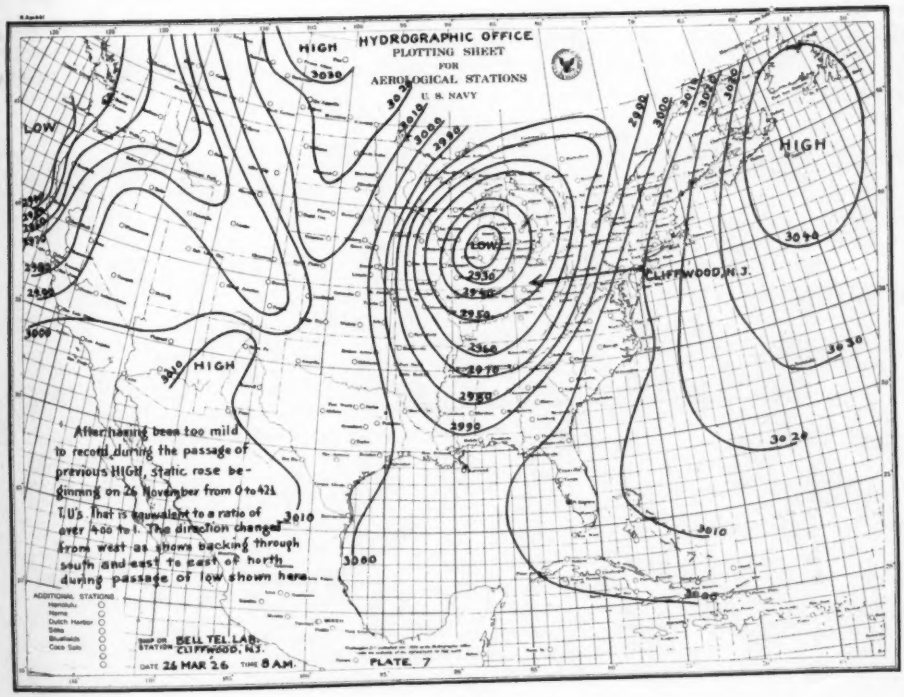
It is seen that from Guantanamo where the *Kittery* later moored, the heaviest static was in the general direction of the southeast quadrant. The center of the storm was 600 miles distant. (See Plate 5.)

Plate 4 shows the location of the centers of the Miami hurricane from the time it was first observed to the eastward of the Lesser Antilles to the time it filled up and dissipated over Mobile, Alabama. Did not this static belt drift along with the hurricane? How far will a direction finder be able to reach out with sufficient precision to make its use practical in habitually tracking



BREEDING PLACE OF HURRICANES—DOLDRUMS


HYDROGRAPHIC OFFICE
PLOTTING SHEET
FOR
AEROLOGICAL STATIONS
U. S. NAVY
HIGH
LOW
CLIFFWOOD, N.J.
Static zero at Cliffwood, N.J. at the time the center of a HIGH coincident with observing station.
ADDITIONAL STATIONS
Honolulu
Nome
Dutch Harbor
Sitka
Bluefields
Coco Solo
BELL TEL. LAB.
STATION CLIFFWOOD, N.J.
DATE 25 NOV. 26 TIME 8 A.M.
PLATE 6


HYDROGRAPHIC OFFICE
PLOTTING SHEET
FOR
AEROLOGICAL STATIONS
U. S. NAVY
HIGH
LOW
CLIFFWOOD, N.J.
After having been too mild to record during the passage of previous HIGH, Static rose beginning on 26 November from 0 to 421 T.U's that is equivalent to a ratio of over 400 to 1. The direction changed from west as shows backing through south and east to east of north during passage of low shown here.
ADDITIONAL STATIONS
Honolulu
Nome
Dutch Harbor
Sitka
Bluefields
Coco Solo
BELL TEL. LAB.
STATION CLIFFWOOD, N.J.
DATE 26 MAR 26 TIME 8 A.M.
PLATE 7

such storms? The dotted line shows how the system may enable us to reach out in the region to the eastward of the Lesser Antilles where barometer readings are scarce (from St. Thomas, Barbados and Trinidad) and triangulate such a static center in hurricane season.

THE DOLDRUMS, BREEDING PLACE OF HURRICANES

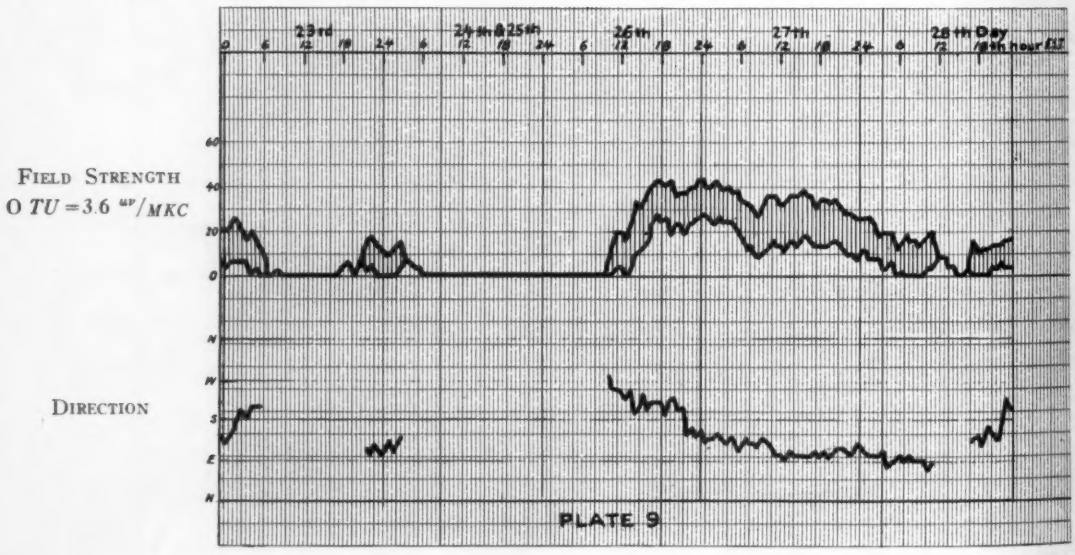
Figure 3 shows the ideal atmospheric distribution for summer, from which the hurricane belt, the doldrums may be studied. In addition to those hurricanes that form to the eastward of the Lesser Antilles, we see the breeding place for the early spring and late fall type that form around the Isthmus of Panama, between the North Atlantic or States high and the South Pacific high. The selection of compass stations here as elsewhere will depend upon the proved range of accuracy of the radio compass for this kind of work.

Anyone working a field as new and undeveloped as this naturally finds comfort in another independent source wherein his conclusions have been verified. Mr. Friis of the Bell Telephone Research Laboratory has taken observations with an instrument developed at that laboratory over a period extending from last August up to the present date. They very generously coöperated with the Hydrographic Office in this work and I show here the results of a part of their observations which substantiate work previously done by us.

Figure 6 shows the high central at Cliffwood, New Jersey, November 20, 1926. Static was zero during the passage of this homogeneous high. Following its passage, the low shown in Figure 7 in its motion of translation to the eastward passed over the same station. Static rose in intensity from 1 to over 400 microvolts per meter during its passage. The direction shifted consistently from west as shown to north of east during the passage. The graph of direction and intensity of static shown in Figure 9 was received by their machine.

Some idea of the effect of this static intensity on the received signal is gained when the reader realizes that the Bell Telephone System in trans-Atlantic communication tries to maintain a received signal strength for code of five microvolts per meter and for telephony fifteen or twenty microvolts per meter.

The Hydrographic Office is pleased to see its desire of a year ago so quickly fulfilled by commercial enterprise. We said then that an instrument that would record both direction and intensity of static would be necessary to the successful accomplishment of this work. Dr. Austin at the Bu-



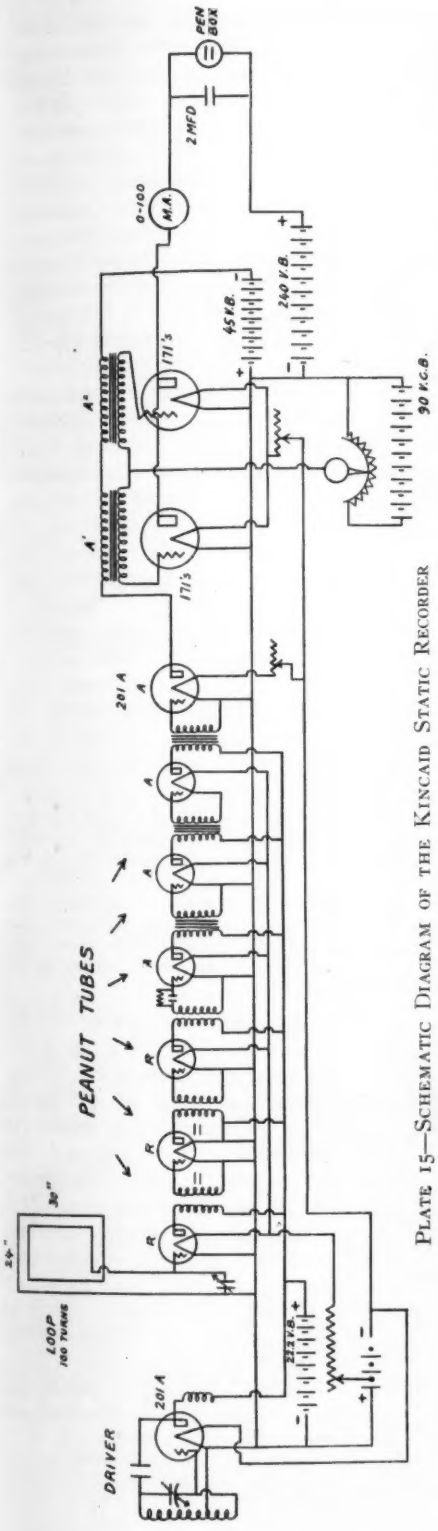


PLATE 15—SCHEMATIC DIAGRAM OF THE KINCAID STATIC RECORDER

reau of Standards has also developed a fine automatic static recorder and there are still others of promise.

The recorder we used is shown in Figures 8 and 15. It is slightly different from the hookup we used at Bellevue Laboratories which was as follows:

The loop, an SE-515A, was six feet high, four feet three inches wide, and consisted of ninety turns, spaced over an axial length of four feet three inches. The loop center was grounded.

The terminals were connected to an SE-1934 amplifier and tuned by a 0.01 m.f.d. variable condenser (SE-1830).

The amplifier had three radio frequency stages, a detector and two audio frequency stages of amplification.

An additional audio frequency stage was used, the output of the latter being connected in parallel, and the negative grid bias being adjusted for zero plate current, at zero signal, by means of a potentiometer. The plate current of the two tubes actuated a pen which was shunted by a 1 m.f.d. condenser.

The instrument combination described above results in depression of the pen for each static crash. The pen records on a card, which rotates very slowly in synchronism with the compass loop, two maxima and two minima being indicated for 360° of rotation (a bilateral loop operation). Some unilateral experiments were conducted at Bellevue.

The motor was so geared as to be able to make one revolution in six to ten minutes. From this it can be seen that each graph contains from three to ten complete revolutions of the compass and consumes from twenty to ninety minutes.

The recorder used

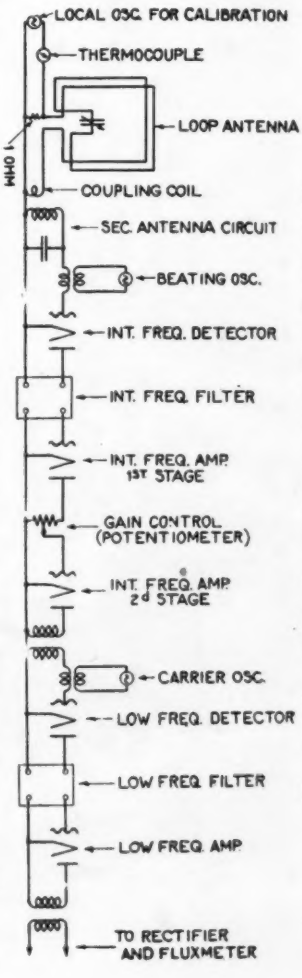


FIG. 10—SCHEMATIC CIRCUIT DIAGRAM OF BELL RECEIVING SET

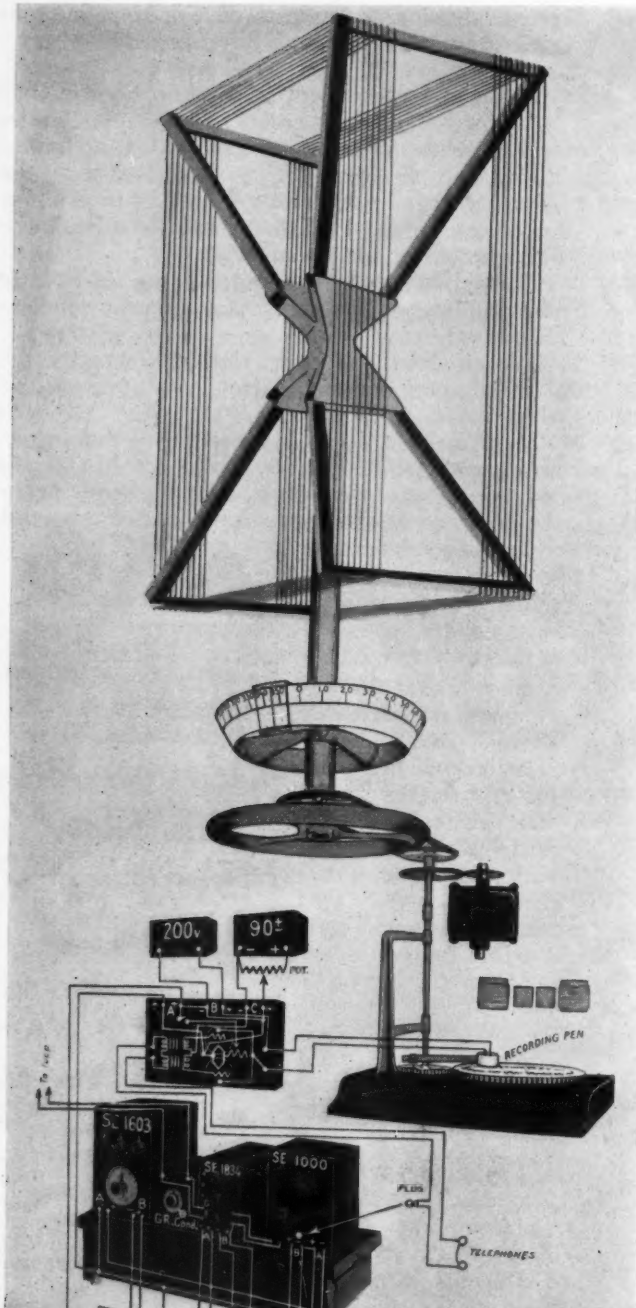


FIG. 8.

at Cliffwood by the Bell Telephone Laboratories is shown in the schematic diagram Figure 10. It is an ordinary double detector set that requires altogether ten tubes, of which the last low frequency amplifier tube must be able to handle ten watts in order to prevent overloading. The power supply may be rectified alternating current.

The gain control is inserted in the first intermediate frequency amplifier in order to be sure that no tubes are overloaded. The local oscillator shown is used for amplification calibration of the set and requires no special shielding as its input voltage induced into the loop is comparatively large.

The selectivity of the set is determined by three separate units, viz., the antenna circuits, the intermediate frequency filter, each of which has a specific use. Carson and Zobel[1] have made the following statement:

> In filters designed to select a band of frequencies of width W, the ratio of energy transmitted through the network by the signal and by random interference is inversely proportional to the band width and increases inappreciably when the number of sections is increased beyond two.

The main purpose of the filters is therefore not to define the frequency band of the set insofar as static is concerned, but to exclude continuous wave interference. It is hoped that 500 cycles wide frequency bands[2] can be maintained free of continuous wave interference for static measurements and the simplest way to obtain such a band in the receiver is to make the low frequency fil-

[1] "Transient Oscillators in Electric Wave-Filters," John R. Carson and Otto J. Zobel, *Bell System Technical Journal*, II, No. 3, p. 27.

[2] Bands at 15, 30, 60, 120 . . . . kilocycles would probably be satisfactory.

ter an efficient low pass filter that cuts off every frequency above 600 cycles. More than two coupled circuits are hardly required in the antenna circuits, but the intermediate frequency filter ought to have sharper cut-off points than two coupled circuits will give. The selection of filters naturally depends upon the continuous wave interference and it may in some cases be possible to reduce the number of filters and thereby make the recorder cheaper. The records shown later correspond to a frequency band of 2,000 cycles—between 57.5 and 59.5 k.c.—but it will probably not be long before continuous wave interference makes it necessary to reduce this band width. It is desirable to have a loud speaker connected to the output of the set and occasionally listen for continuous wave interference.

complete turn in fifteen seconds by a clock motor. The different elements are explained in the figure and the whole action may be understood by studying this carefully. However, it is probably worth while to go through a complete fifteen-second period and explain in detail the purpose of each part.

Time in seconds, 0-10:

Switch *G* is open, therefore relay *A* is open and no current can pass through the windings of relays *C* and *D*. (These relays start the gain control motor, which is therefore shut off.)

Contact 1 of relay *A* is closed and closes the circuit consisting of the secondary winding of the low frequency output trans-

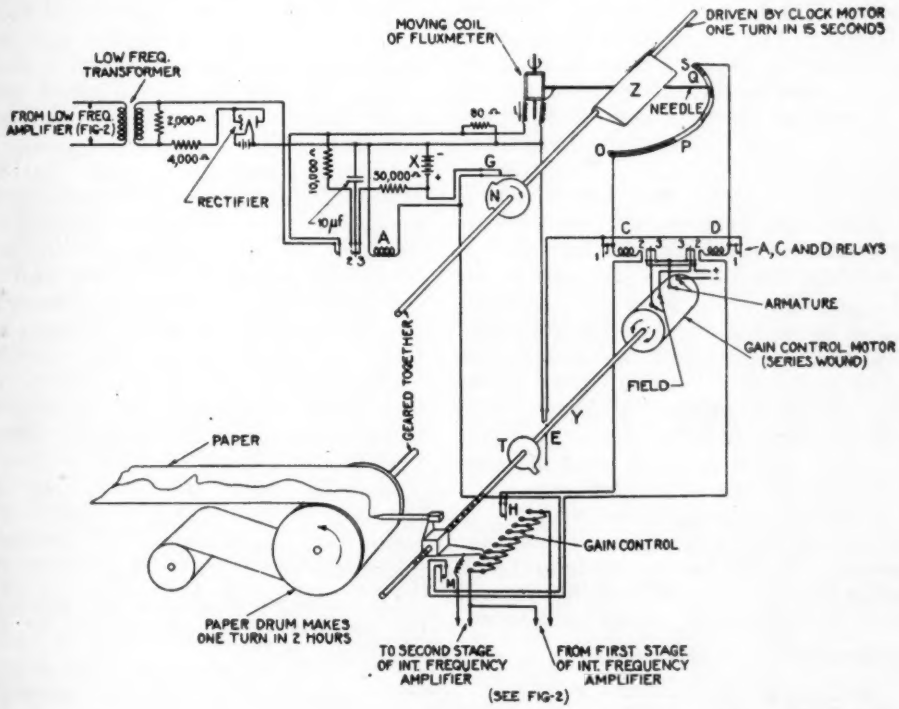


FIG. 11—SCHEMATIC CIRCUIT OF CONSTANT OUTPUT CONTROL APPARATUS

The constant output control apparatus is shown in Figure 11. The fluxmeter is seen in the upper right corner. Full deflection corresponds to 2×10^{-4} coulomb. The needle is normally free to move except when the cam *Z* presses the needle down until its point touches the scale *OS*. The shaft carrying the cam *Z* and the disc *N* is rotated one

former, the rectifier for the static currents and the fluxmeter. The 2,000-ohm and 4,000-ohm resistances in this circuit insure distortionless input voltage to the rectifier. The fluxmeter is damped by an 80-ohm shunt. The needle, which was initially at zero, will therefore move, its deflection being proportional to $\int i dt$.

Time in seconds, 10-14:

Switch *G* is closed by the cam on the revolving disc *N* and locks relay *A*.

Contact 2 of relay *A* is opened and opens the rectifier fluxmeter circuit, thereby bringing the fluxmeter needle to a stop. Contact 3 of relay *A* is closed and makes the battery *X* charge the 10 micro-farad condenser through the 50,000 ohm resistance.

Time in seconds, 11-14:

The cam *Z* presses the needle point down on the scale *OS*. Now, one of three things will happen.

(1) Static has decreased since the last period, so that the needle point will make contact with the metal strip *OP* and close the following circuits: Battery *X*, needle of fluxmeter, winding of relay *C*, switch *H*, and switch *G* to battery *X*. Relay *C* is therefore closed and its closed contact 2, together with contact 3 of the open relay *D*, will start the gain control motor. After approximately half a turn of the gain control or motor shaft *Y* the needle point is lifted from *OP* by the rotation of the cam *Z*, but relay *C* stays closed due to the fact that it is self-locking through its contact 1, so that the shaft *Y* continues turning until the switch *E* is opened by the disc *T*. This opens the self-locking circuit of relay *C*. Relay *C* therefore opens and the gain control motor stops after the shaft *Y* has made exactly one complete turn and increased the gain of the set one step (4 Transmission Units or 1.58 times). Notice that the opening of the needle point contact does not break any current, due to the use of self-locking relays. This preserves the needle point contact.

(2) Static has not changed since the last period. The needle point will now touch the insulating strip *PQ* and nothing else will happen, i.e., the gain of the set remains unchanged.

(3) Static has increased since the last period so that the needle point now will make contact with the metal strip *QS* and close relay *D* and as in case (1) the motor will start and turn the shaft *Y* one turn, but this time in the opposite direction, i.e., the gain of the set is decreased one step.

Time in seconds, 14:

Switch *G* is opened again by the revolving disc *N* and opens relay *A*. Contact 2 of relay *A* is closed and will discharge the 10 micro-farad condenser through the fluxmeter, thereby bringing the needle back to zero. (Notice that the time constant of this discharge circuit is $10{,}000 \times 10 \times 10^{-6} = 1\text{-}10$ seconds.)

Time in seconds, 15:

A new period has started.

The purpose of the switches *M* and *H* is to stop the motor when the gain control switch arm has reached the end of the scale.

The recorder is of such recent development that no comprehensive data are yet available.

Figure 12 shows part of an actual record of static received on a set tuned to 57.5-59.5 kilocycles. The ordinates represent the attenuation of the gain control of the set and it is to be remembered that the gain of the rest of the set is constant. The curve shows that the static power on the morning of October 30 changed more than 10,000 times. The point *B* gives the effect of inducing a local signal of strength 380 microvolts, per meter in the loop.[3] The point *C* shows that 8:25 A.M. the static intensity received on a 2,000-cycle wide frequency band corresponded to the energy received from a continuous wave signal of strength 3.8 microvolts per meter. It would be practi-

[3] It may be worth while to have such a calibration signal introduced automatically for instance once every two hours.

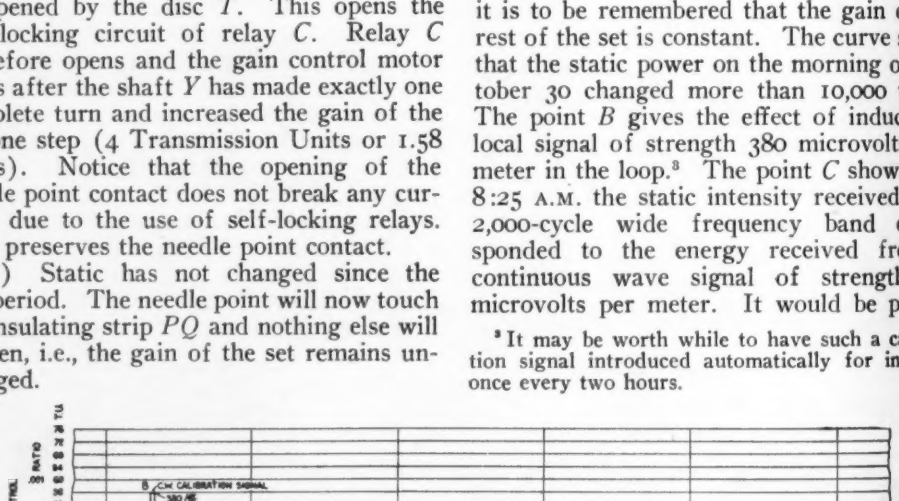


FIG. 12—STATIC RECORD, MORNING OF OCTOBER 30, 1925, CLIFFWOOD, N.J., U.S.A.

cal always to relate static to such a continuous wave signal. Experiments are now being conducted to determine whether the energy received from static is proportional to the width of the frequency band of the receiving set and if such is found to be the case then it is proposed to have the data relate to a 1,000-cycle wide band. That static is, say, seven microvolts per meter per kilocycle would then mean that the energy of the static received on a 1,000-cycle wide frequency band is the same as the energy received from a continuous wave signal of strength seven microvolts per meter.

Attempts have been made to calibrate the set by inducing in the loop voltages of the shape shown in Figure 13. Relating static

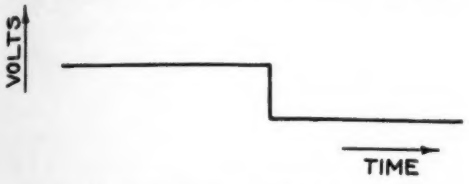


FIG. 13—SHAPE OF IMPULSE VOLTAGE

to such signals would have the advantage of being independent of the band width of the set. Such signals were obtained by closing and opening a mercury switch, but one signal per second, or ten impulses per period, would overload the set (the tubes) very much. At least ten impulses per second would be required if the set should not be overloaded by each individual impulse, but this would be a difficult task to accomplish and it is therefore recommended that static be measured as explained above, by inducing a local continuous wave signal into the loop. The fact that five static crashes in the course of ten seconds—one period—does not overload the set while 100 impulses of the shape shown in Figure 5 are required to prevent overloading gives us some interesting information on static. It shows that a single static crash is not a single sudden change of the field in the ether and that it cannot be represented by less than twenty consecutive impulses.

The record of Figure 12 shows that each step on the gain control potentiometer is 4 TU and the selection of such steps and of fifteen seconds will now be discussed. To decrease the 4 TU step to a 1 TU step would decrease the speed of the set, i.e., it would take four times longer for the recorder to register a sudden change in the static level which is particularly a disadvantage when the recorder is connected to a rotating directional antenna. On the other hand a step larger than 4 TU would not give the static level with sufficient accuracy. If the time periods are changed from fifteen to ten seconds, then the "speed" of the set is increased, but the set is then inoperative over a larger part of the period since it takes five seconds to change the gain of the set and bring the fluxmeter needle back to zero. Besides, such a decrease in time period would increase the probability of overloading and also it would make the energy received per period vary more irregularly especially if static consisted of separate crashes.

TABLE OF CONVERSION OF TRANSMISSION UNITS TO RATIOS

T.U.	Ratio
0	1
6	2
12	4
20	10
40	100
60	1000

Dr. Friis in describing his static recorder says:

> The reason for the small advance which has been made to date in the automatic recording of static is probably due largely to the lack of suitable apparatus. Certainly there has never been any doubt that automatic records would be very valuable. It is just as important to know the static level as it is to know the strength of a radio signal because it is the static to signal ratio that determines the intelligibility of the signal. A static recorder connected to a rotating directional antenna system would tell us where static comes from and, therefore, enable the radio engineer to determine whether it is worth while to construct a directive antenna system. Also the connection between thunderstorm areas and static would make static recording valuable to the meteorological service. There is perhaps no reason why a suitable static recorder should not make it possible in a few years to obtain a daily static forecast just as we get our weather forecast now.

I believe another year will see such static forecast as Dr. Friis mentions possible, and with such forecasts will come a more exact knowledge of the relation of storms to static. The result of this will be not only the identification and tracking of many storms which are difficult especially over ocean areas where barometer readings are scarce, but also the definite forecasting of communication conditions and the use of exact static measurements in the design of radio equipment.

An Analysis *of* Recent Trans-Atlantic Flights

By Lieutenant Logan C. Ramsey, *U. S. Navy,* and Lieutenant Earle H. Kincaid, *U. S. Navy*

Introduction

THE historical long distance flights of American aviators during the past few months have been so close together that the enthusiasm about one hardly had time to subside before the world was thrilled by the next. Such a sequence of great aërial achievements has led a large percentage of the people to believe that nearly all of the problems of the air have been solved definitely and that only minor details have to be worked out before transoceanic aërial lines are commercially practicable. Certain pessimistic reactionaries take exactly the opposite viewpoint and claim that the courageous pioneering flights of this summer's crop of aërial visitors to Europe are nothing other than "stunts" accomplished more by luck than anything else.

Neither attitude is correct. In order that we may not be misled by the over enthusiastic views of the optimists or the pessimistic statements of the mental dyspeptics let us analyze in detail the conditions that governed the flights of Nungesser, Lindbergh, Chamberlin and Byrd.

The Flight of Nungesser and Coli

In this analysis the following assumptions are made: first, that the French aviators were not forced down in mid-Atlantic by engine trouble, stress of weather, or other emergency; and, second, that the confirmed sighting of the *White Bird* at the mouth of the Shannon River indicated that the navigator, Coli, was carrying out his announced intention of following a modified great circle course to take advantage of weather conditions. (See Charts No. 1 and No. 2.) The course that Coli started to follow was a great circle course from Paris to Lat. 55° N., Long. 20° W., and then to Lat. 55° N., Long. 40° W. and from this spot in mid-ocean a second great circle course to New York City. One point that is rather important is the fact that a great deal of the pessimism about their fate was caused by the failure of ocean steamers to sight the plane. When it is considered that the route they probably followed being so far to the north of the usual trans-Atlantic steamship lines crossed only the lesser traveled Canadian routes of Malin Head to Montreal and New York to Scotland Firth in only two points, and these were in the following positions: Long. 21° W., Lat. 54°30′ N. and Long. 26°10′ W., Lat. 54°50′ N., it is not strange they were not sighted.

However by following these courses Coli believed that he would insure favorable winds through his entire route and would pass to the northward of an atmospheric depression just off the coast of Newfoundland. This probable assumption could have been based upon weather advices from the United States Weather Bureau to the effect that he would have favorable winds in pursuing such a course, which assumption was entirely justified by actual conditions.

The latest information received from Paris seems to indicate that, while Nungesser had the benefit of the previous day's weather map of the American side of the Atlantic, he was without the latest information obtainable on this side on the day of his departure due to unfavorable reception conditions which broke down radio communication.

If this be correct and the French aviators were not forced down, the following is a description of conditions probably encountered. After leaving Paris a gentle following wind of approximately twelve miles an hour aided them for about the first third of their journey. In about Long. 31°

W. the wind began shifting slightly to the southeastward and increased in force gradually until darkness. Up until this time a navigator of Coli's known ability would be taking into consideration the northward drift due to the wind and would make allowance for it, thus maintaining his exact course.

At about darkness they began to come under the influence of atmospheric depression off the coast of Newfoundland which had not moved to the east as much

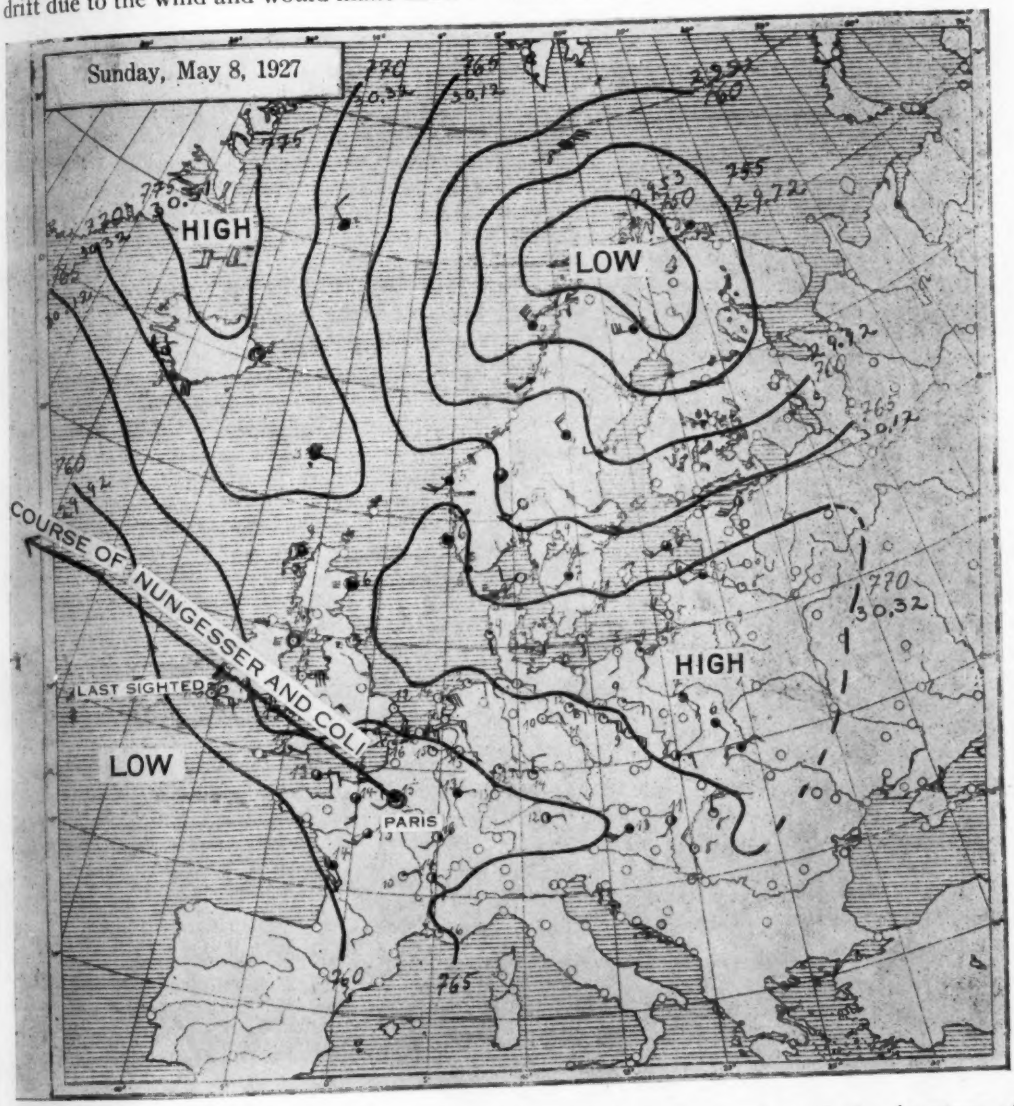


CHART No. 1. This chart shows weather conditions obtaining at the time of the departure of Nungesser and Coli from Paris. Data taken from official weather chart Berlin.

Explanation of the weather chart symbols: The lines drawn (isobars) connect the points of equal barometric heights, reduced to sea level shown in both millimeters and inches. The figures at the station circles indicate the air temperature in degrees Centigrade. The direction of the wind is represented by arrows which are drawn through the station circle in the direction of the wind. The force of the wind is represented by the more or less numerous feathers on the arrows. For instance, indicates westerly storms, light easterly winds, ◎ calm. The amount of clouds and the various forms of precipitation are shown as follows: ○ clear; ◔ ¼ cloudy; ◑ ½ cloudy; ◕ ¾ cloudy; ● complete overcast; ≡ fog; ∞ mist; • rain; ✱ snow; △ sleet; ▲ hail; thunder storms.

Nungesser and Coli are seen to have flown from Paris with favorable winds from the northerly quadrant of a low centered over the ocean to the west of France.

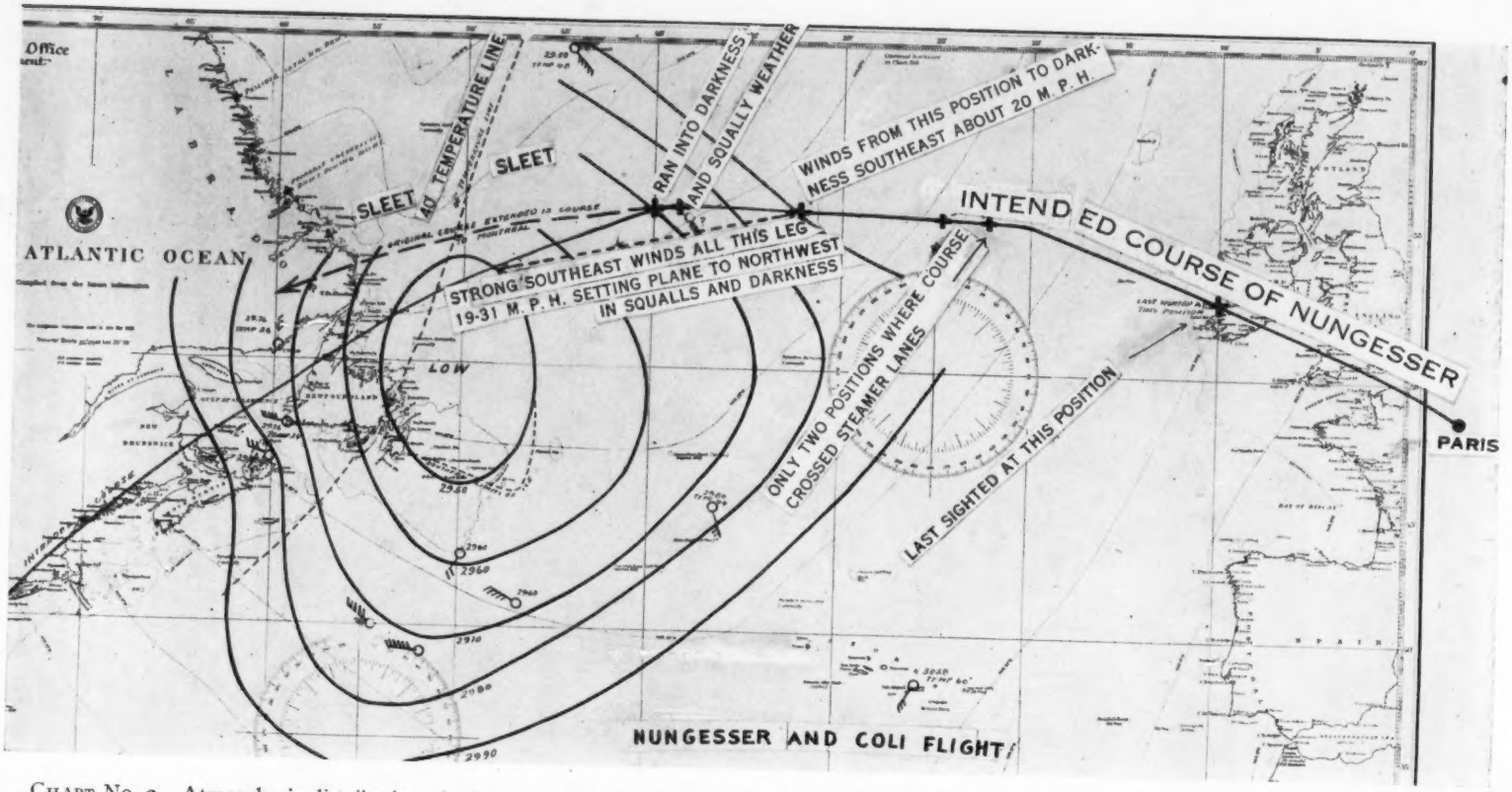

ATLANTIC OCEAN
SLEET
SLEET
40° TEMPERATURE LINE
RAN INTO DARKNESS AND SQUALLY WEATHER
WINDS FROM THIS POSITION TO DARKNESS SOUTHEAST ABOUT 20 M. P. H.
INTENDED COURSE OF NUNGESSER
PARIS
STRONG SOUTHEAST WINDS ALL THIS LEG
19-31 M. P. H. SETTING PLANE TO NORTHWEST
IN SQUALLS AND DARKNESS
ONLY TWO POSITIONS WHERE COURSE CROSSED STEAMER LANES
LAST SIGHTED AT THIS POSITION
LOW
NUNGESSER AND COLI FLIGHT

CHART NO. 2. Atmospheric distribution obtaining over the the North Atlantic Ocean at the time of the flight. Weather information courtesy U. S. Weather Bureau. Pressure is in inches; wind—Beaufort scale; temperature—Fahrenheit. EDITOR'S NOTE: If the figure representing the strength of the wind, Beaufort scale, is multiplied by 5, the result for all practicable purposes, will give the velocity of the wind in nautical miles per hour. For example, a wind of strength 8 will have a velocity of 40 knots.

as they probably hoped. A little while after darkness, still assuming them to be carrying out the modified great circle course, they would have changed their course to the southward. However, a gradual increase of wind which might have been imperceptible in the darkness and which was encountered about this time, may have blown them off their intended course to the northward. If the flyers continued they would have come close to the center of the depression but would have still had favorable winds. From darkness to dawn they encountered freezing temperatures, sleet and snow. The increase in the velocity of the winds, the lowering clouds and intermittent squalls might have prevented them from following the intended course, or they may have shifted the course at this point to the northward purposely to avoid the storm's center. In addition, they had announced that in case of bad weather they might change their destination from New York to Montreal.

In either of these two cases, still assuming them to be in the air, they probably encountered the coast of Labrador about midnight Sunday night or shortly after. It is well to call attention at this time to the fact that, passing close to the center of an atmospheric depression, the clouds would be low and, if flying underneath as they undoubtedly were, they would be flying at an altitude not much greater than 1,000 feet. Due to the decrease in atmospheric pressure from that obtaining at Paris when the flight began, their altimeter would give a false reading of from 1,000 to 1,700 feet, depending upon the barometric pressure they actually encountered. What this actual pressure was we can only estimate but it is quite possible their altimeter may have indicated a height of 3,000 feet when in reality they were probably flying less than 1,500 feet above the water.

In the darkness, they probably were not expecting to sight land so early and might have passed over the coast line and proceeded inland without knowing it.

In this case, quite a number of possibilities are apparent: First, that they may have continued on until daylight and discovered themselves inland over an unknown country; second, they may have been forced down by stress of weather inland; third, they may have crashed into the side of a mountain. Labrador, along the part of the coast they probably encountered, is a plateau 500 to 2,000 feet high rising rather abruptly within a few miles of the coast. Inland it is a rolling country and many ridges and hills rise 500 feet or more above their surroundings but in the depressions between the ridge are many lakes. The entire country is well wooded.

Although discovered early, detailed information about the interior of this desolate land is lacking. Jacques Cartier in 1534 called it "The Land God Gave Cain." Lieutenant Roger Curtis in 1680 described it as "A country formed of frightful mountains, a prodigious heap of barren rock." The description of Major Cartwright in his diary of 1786 is probably the best. "God created that country last of all and threw together there the refuse of his materials as of no use to mankind."

Along the coast of Labrador as far south as Cape Race, fields of ice, icebergs and growlers were present and Belle Isle Strait was still blocked with ice. In case the French aviators were forced down in this area, their chances of survival are small. If they encountered the coast of Labrador in the darkness, it is quite probable they crashed against the side of a mountain, as did Major Martin on the Army's "Round-the-World Flight," particularly in view of a false indication by their altimeter due to the decrease in barometric pressure.

Another viewpoint which is gaining adherents, as time passes and no trace of the French aviators or their plane is brought to light, is that they encountered an area while passing near the storm center in which frozen precipitation weighted down the plane.

When the surface temperature is close to freezing as it was over a part of their probable track, any precipitation at moderate altitudes is apt to be encountered in the form of sleet or snow. A plane flying through such areas is rapidly coated with frozen precipitation and soon becomes loaded down to a point where it cannot remain in the air.

The experiences of all aviators who flew over the Atlantic subsequent to this flight seem to strengthen the idea that the *White Bird* was forced down by the weight of caked ice on her wings and fuselage for, despite the fact that they flew later in the year when temperatures were generally milder, Lindbergh, Chamberlin and Byrd all encountered freezing temperatures in the upper air.

Weather Bureau. Pressure is in inches; wind—Beaufort scale; temperature—Fahrenheit. Editor's Note: If the figure representing the strength of the wind, Beaufort scale, is multiplied by 5, the result for all practicable purposes, will give the velocity of the wind in nautical miles per hour. For example, a wind of strength 8 will have a velocity of 40 knots.

Their best chance of survival, considering the known courage and resourcefulness of Nungesser and Coli, the one on which the last faint hope was based, was that Nungesser made a safe landing in one of the many lakes which dot the interior of Labrador. Had this been true, weeks or even months might have passed before they would have been able to make their way to civilization. Little hope is now held out for their safety.

The lessons that this flight demonstrates are:

First, it is at present dangerous for transoceanic planes to fly near centers of depressions, particularly when such centers are accompanied by temperatures close to freezing; and second, the extreme importance of detailed weather information collated in a form designed to fit the peculiar needs of the airman; and third, the danger of low visibility conditions due to centers of at-

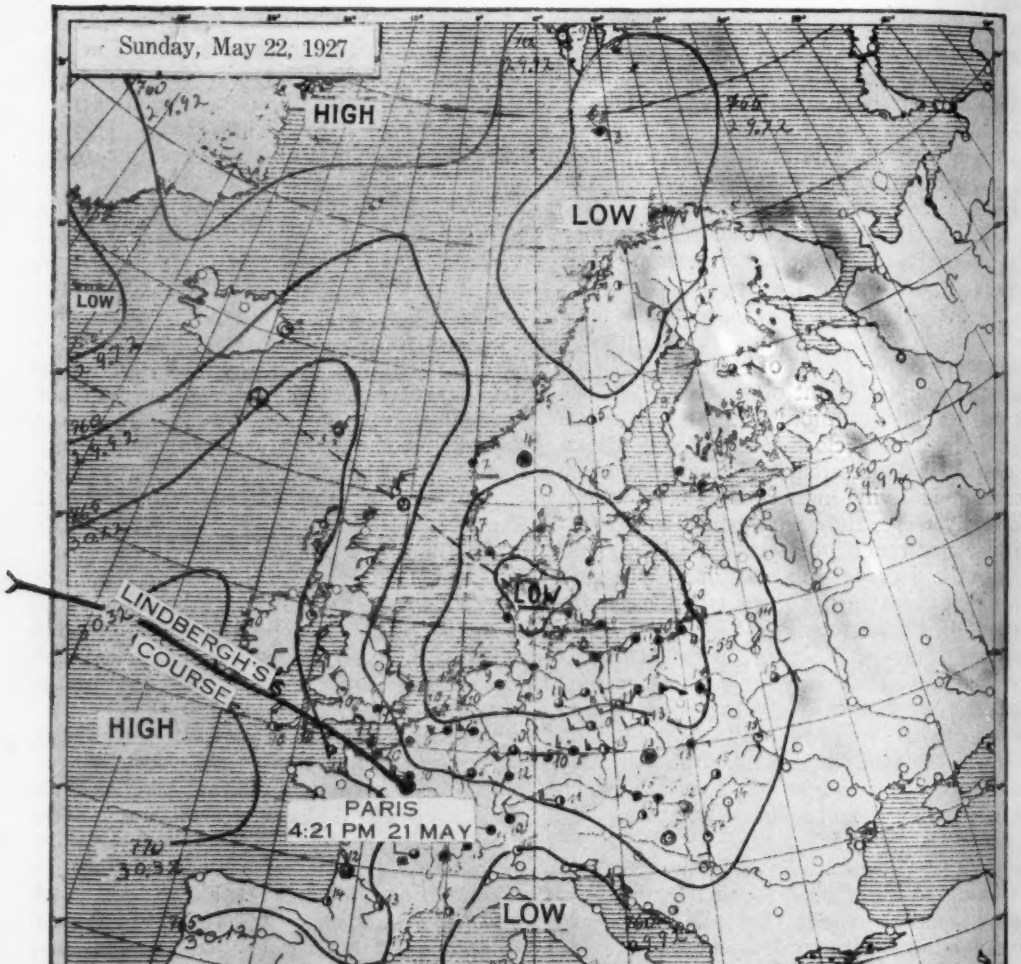


CHART No. 4. The Low with center over Jutland had moved as shown from south of Iceland to this position. The low moved nearly parallel to his course giving him favorable northwesterly winds of increased force with varying cloudiness and little or no rain. Explanation of symbols same as in Chart No. 1.

mospheric depression close to the point where a landfall is to be made, particularly when the landfall occurs during darkness.

Lindbergh's Flight

The most marked characteristic of the weather map of the North Atlantic, during the time Lindbergh was making his flight, was an elongated area of high pressure stretching almost completely across the ocean. This insured him generally clear weather with good visibility conditions. Its position with reference to the track of the flight was such that he encountered over the ocean only tail winds which increased considerably his speed over the surface. (See charts No. 3 and No. 4.)

The two areas of depression, one near Labrador and the other near Great Britain, were unfavorable factors but generally speaking the weather conditions were excellent and the winds most favorable. Only the one near Labrador affected his flight unfavorably. This unfavorable influence was manifested, first, by head winds from New York to Cape Breton Island and, second, by the area of sleet through which he passed shortly after leaving Newfoundland and while in the southeastern quadrant of the low pressure area.

The European depression, during his flight, moved southeasterly very accommodatingly and, instead of menacing him with bad weather, actually aided him by affording strong tail winds. One is almost tempted to say that the elements, angered by his audacity, at first conspired to defeat him and were then so impressed by his courage and skill that they decided to follow General Forrest's motto, "If you can't lick 'em, jine 'em."

From press accounts the public is familiar with the actual progress he made, but a study of the winds that affected his speed is of great interest. From New York to Cape Breton Island a head wind cut down his speed over the surface. At that point, it shifted approximately 180 degrees and increased his speed over the ground by approximately thirty-five statute miles per hour. No better illustration can be afforded of the necessity, in long-distance flying, of accepting a minor and local disadvantage to take advantage of a generally favorable condition, than this shift from a head to a tail wind. From Cape Breton his track was close to the northern edge of the large high pressure area and the winds were almost directly on his tail. As he approached Europe, the winds continued to assist his progress and intensified in force until, at times, the speed of his plane was increased by as much as forty miles an hour.

One of the greatest things demonstrated by Lindbergh's lone flight was the fact that conditions aloft are sometimes unfavorable in isolated spots when the surface weather map indicates nothing but excellent conditions. This emphasizes the necessity to aviators of weather information concerning the upper air, particularly where the tracks of the flight approach the arctic regions.

Chamberlin's Flight

Almost as soon after Lindbergh's flight as was possible for meteorological conditions to reproduce the favorable conditions that obtained on May 21-22, they did so, and Clarence D. Chamberlin with a passenger took off. Not only was a high of great magnitude advantageously reaching across the entire North Atlantic but its eastern and western limits overlapped considerably the land on each side. Two similar areas of depression, one near Labrador and one near Great Britain, were present but with this difference—the Labrador low was further to the north than during the previous flight and consequently further away from the track of the flight. (See charts No. 5 and No. 6.) In this position not only was the threat of low visibility and precipitation less imminent, but also the winds along the first third of the flight were more favorable in direction than they were for Lindbergh.

Chamberlin experienced the same shift from a head to a tail wind as his predecessor, but the shift occurred near Cape Sable instead of at Cape Breton Island. This meant that he bucked head winds two hours less which gave him two hours longer with favorable winds. Had both Chamberlin and Lindbergh been competing in identical planes with the same fuel capacity, this difference in wind conditions would have enabled Chamberlin to fly about 100 miles further than Lindbergh could have flown.

While passing through the southeastern quadrant of the Labrador low, Chamberlin encountered a little bad weather with some sleet but compared with Lindbergh's dose it was very mild, due to the fact that while

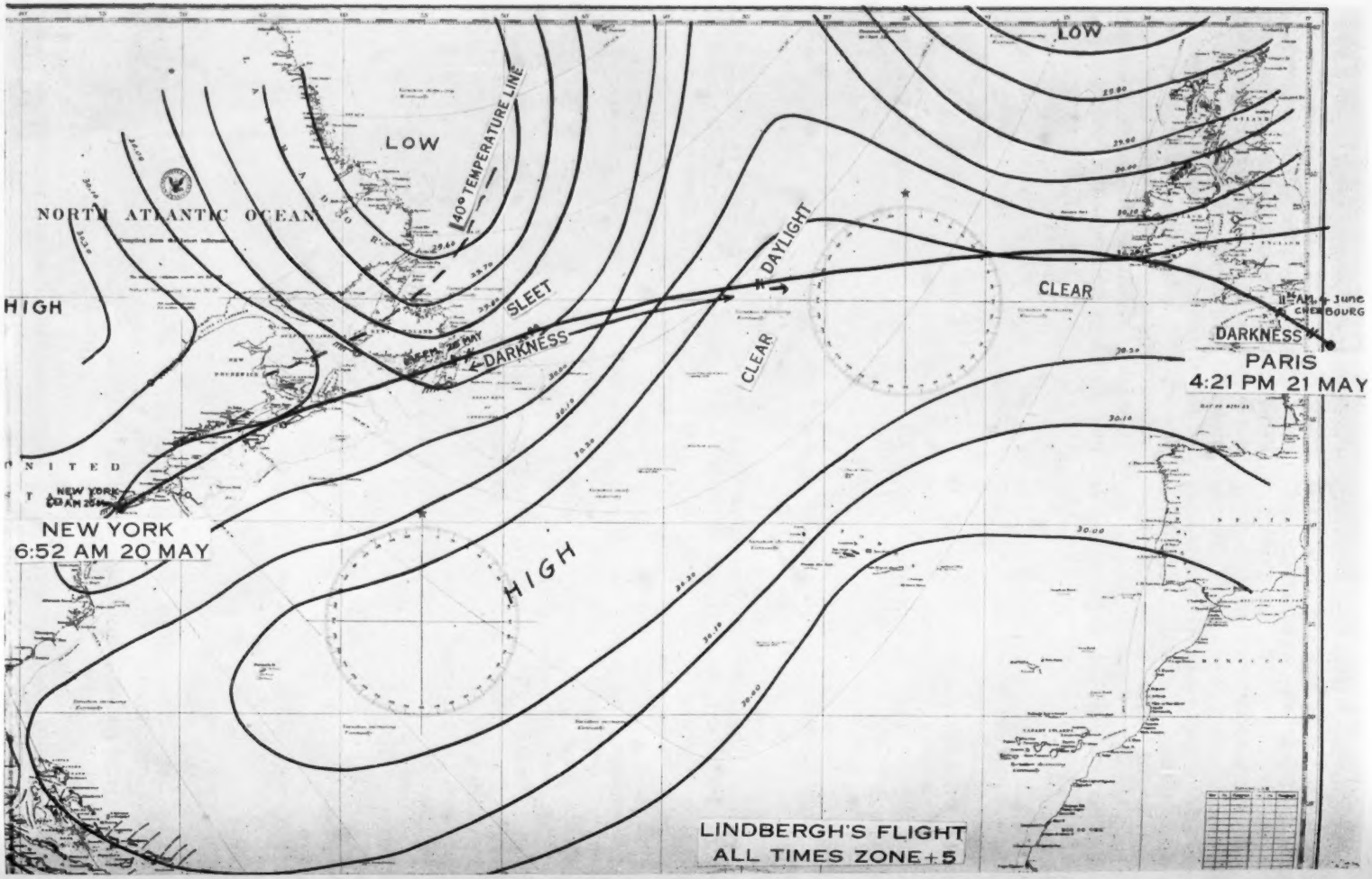


CHART No. 3. Chart shows pressure distribution over the North Atlantic Ocean during Lindbergh's flight; weather data courtesy U. S. Weather Bureau. Barometer—inches; wind—Beaufort scale; temperature—Fahrenheit.

CHART No. 3. Chart shows pressure distribution over the North Atlantic Ocean during Lindbergh's flight; weather data courtesy U. S. Weather Bureau. Barometer—inches; wind—Beaufort scale; temperature—Fahrenheit.

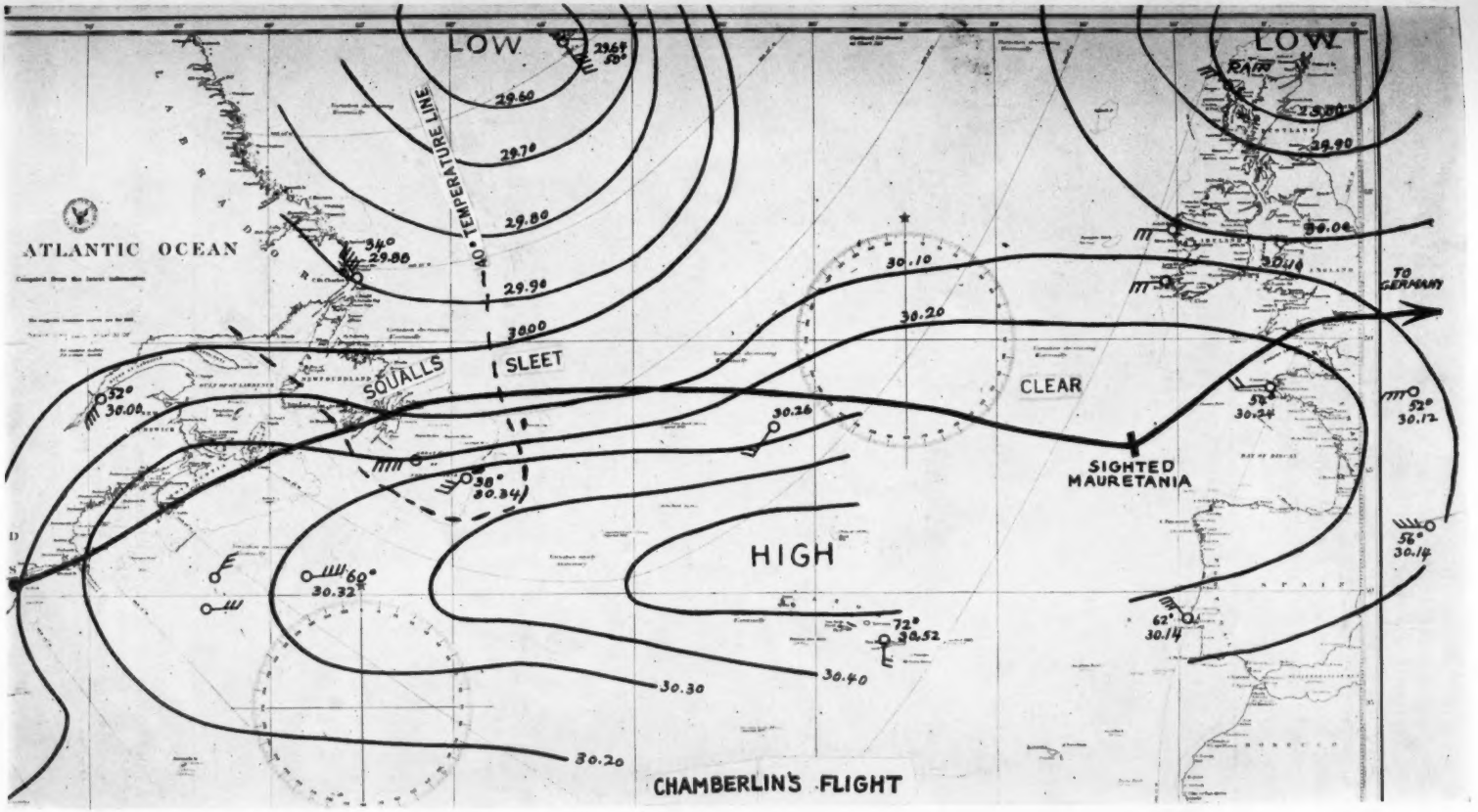


CHART No. 5. June 4-6, 1927. Barometer—inches; wind—Beaufort scale; temperatures—Fahrenheit.

Lindbergh flew as high as 10,000 feet, Chamberlin kept close to the surface. While the surface temperatures in Chamberlin's case were lower over this leg than those which Lindbergh experienced, Chamberlin by flying low escaped a lot of the sleet that so nearly caused Lindbergh to turn back.

All across the Atlantic conditions were ideal—weather clear and the winds highly favorable, though east of the thirty-fifth meridian they were not as strong as on the previous flight. This factor, and in addition the slower speed of the *Columbia*, accounts partially for Chamberlin's slower time over the ocean.

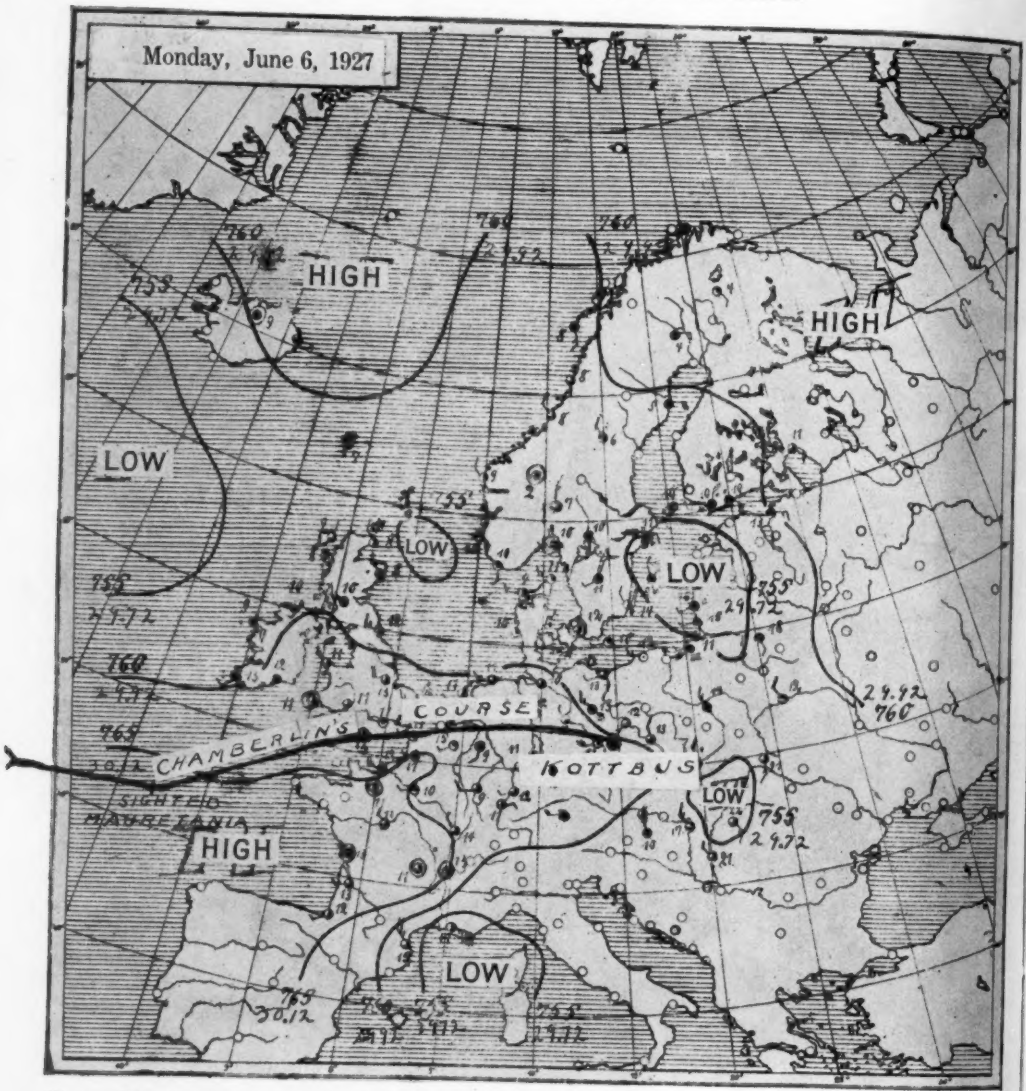


CHART No. 6. Chamberlin's Flight. Weather condition over Europe, Monday, June 6, 1927, 8 A.M., at the time Chamberlin landed at Kottbus and the forecast of the official weather bureau, Berlin. Explanation of symbols are the same as in CHART No. 1.

The cool air coming from the northwest has reached Hungary. It has added new energy to a weak low which yesterday was over Hungary and Poland. In consequence it has widened and extended northward. In western England a rain zone has appeared which apparently belongs to a disturbance still located over the ocean. We need not figure on an immediate change in the weather for the worse.

Prospect for middle north Germany to Monday night:

Varying cloudiness without appreciable precipitation; fairly cool.

But while weather conditions were very favorable other factors hindered—the most important being, according to Chamberlin, compass trouble. This, and the fact that he was probably steering a course to the southward to the great circle track to his destination, caused him to sight and pass over the *Mauretania* in about Long. 13° 30′ W., Lat. 47° N. When he passed over the *Mauretania* he flew low enough to recognize that ship.

It is understood that at this time he was uncertain as to his exact position. He had a copy of a New York newspaper of the previous day, giving a chart which showed the approximate position of various ocean liners crossing the Atlantic. By means of this chart, he was able to correct his course by heading for the southwestern end of England.

This navigational procedure, while highly ingenious and for which he deserves great credit considering the circumstances, is not one to be recommended for general use. As he proceeded along his route during the night of June 5, passing over southern England and the coast of France, he reached the end of the good weather area and ran into a little less favorable condition than he experienced over the ocean, due to lower visibility and a little rain. During this period of darkness, he was hindered in recognizing points over which he was passing and was prevented from reaching Berlin. His landing at Eisleben, Germany, due to exhaustion of fuel, was made under these adverse circumstances.

Chamberlin's inability to reach his exact destination, due to the lessening of the cruising radius of his plane by the lack of adherence to the desired course over the ocean, emphasizes the necessity for navigation on flights of this description. In addition, his flight demonstrates that it is dangerous in aircraft to place entire dependence on one compass or one type of compass. That this lesson has not been lost will be demonstrated by the number of compasses that will be carried on the trans-Atlantic flights which are expected to start sometime this summer.

Byrd's Flight

The weather map of the North Atlantic Ocean during the time that Byrd and his three companions were crossing is almost exactly like a reflection in a mirror of the map that obtained during Nungesser's attempt. Outside of the fact that the directions are reversed, a description of the weather for the one fits the other almost exactly. Of course, Byrd's landfall was made on a well-known inhabited shore, and Nungesser's on bleak Labrador (assumption); the temperatures experienced by Byrd milder than those which Nungesser probably encountered, and the depression through which Nungesser passed covered a greater area. But these differences, while they influenced strongly the survival of the one and the disappearance of the other, are, for the purposes of this discussion, minor ones.

The general characteristic of the weather map for both flights was an area of high atmospheric pressure, covering the first part of the flight, and an area of atmospheric depression near the two destinations. (See Charts No. 7 and No. 8). In each case the axis of the high runs approximately north and south, and not across the ocean as was the case in the flights of Lindbergh and Chamberlin, resulting in strong cross winds for both Nungesser and Byrd.

Both Byrd and Nungesser ran into areas of low visibility almost simultaneously with a shift in the wind force, and in Byrd's case, a change in direction in addition. In each case celestial navigation became impossible and dead reckoning of any accuracy equally so.

Consequently, in spite of the known navigational ability of Byrd, his plane deviated from the desired track. Commander Byrd's account of the difficulties he encountered give us some faint idea of what Nungesser and Coli experienced. For example, for the rain, fog and mist encountered by Byrd over France, substitute snow, sleet, fog, freezing temperatures and the more rugged and desolate terrain of Labrador, and you have a true picture of the odds against the heroic Frenchmen.

However, Byrd passed through a center of atmospheric depression more intense than that encountered by any of the other aviators. This low, which was centered almost directly over Paris at the time of his arrival, was associated with heavy rain, very poor visibility and strong shifting winds. In fact, the *America* was the only trans-Atlantic plane which passed through the very center of a storm and survived.

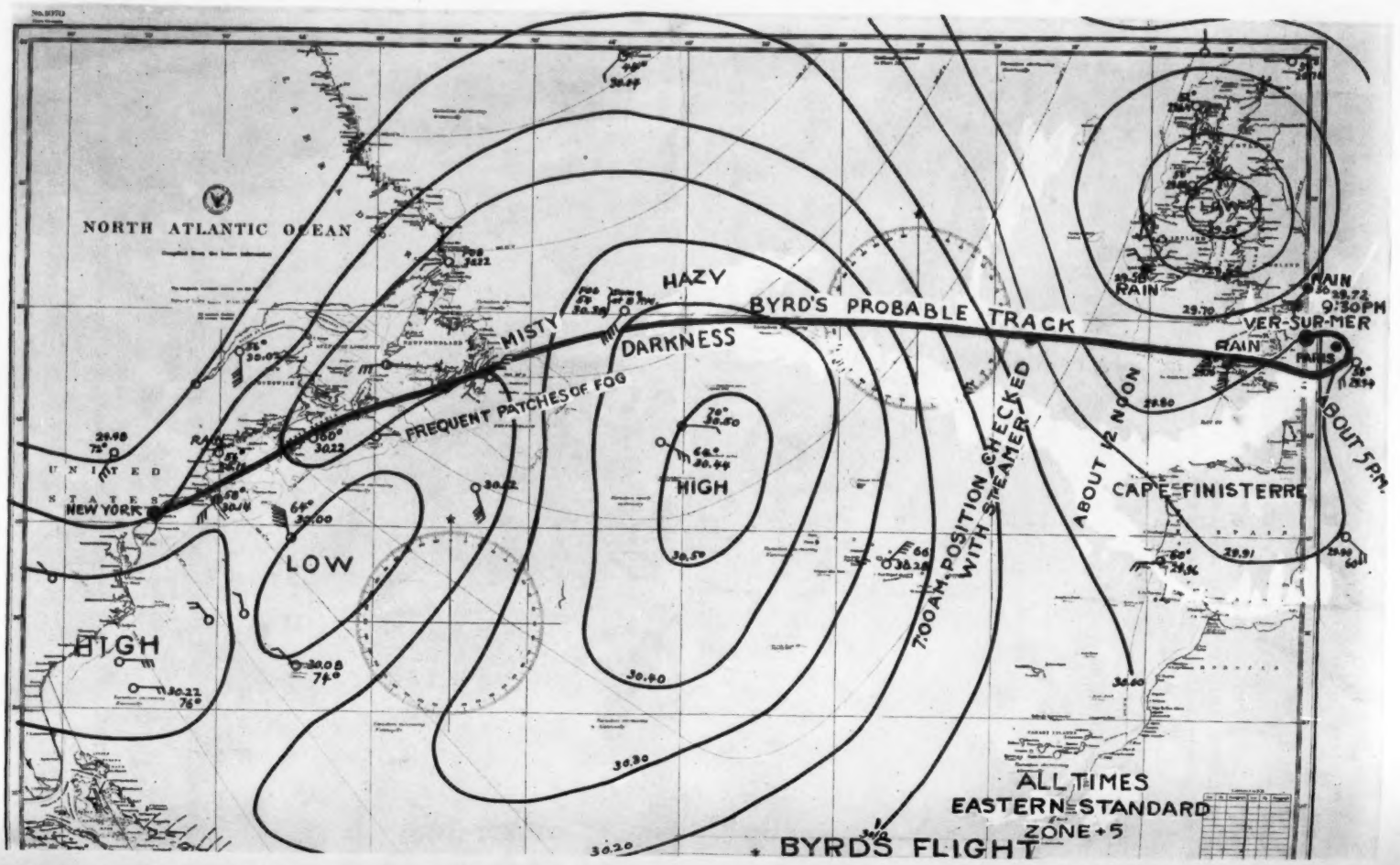


CHART No. 7.—June 29-July 1, 1927. Conditions encountered by Byrd on his trans-Atlantic flight. The haze, fog and cross winds are apparent. Weather data courtesy U. S. Weather Bureau. Barometer in inches; winds—Beaufort scale; temperatures—Fahrenheit.

Ch
inches
landed
ing w
over
gation
pend

A
regul
in th
facts
analy

1.
form

1927

Conclusions

A discussion of the present feasibility of regular trans-Atlantic flying is out of place in this article but certain sets of pertinent facts may be collected from these flight analyses. These are as follows:

1. The great importance of weather information;

2. The scarcity of good weather over the trans-Atlantic flight routes;

3. The paucity of weather reports from ships;

4. The great value of aërial navigation on such flights;

5. The necessity for information concerning movement of the upper air;

6. The obvious value of radio; and

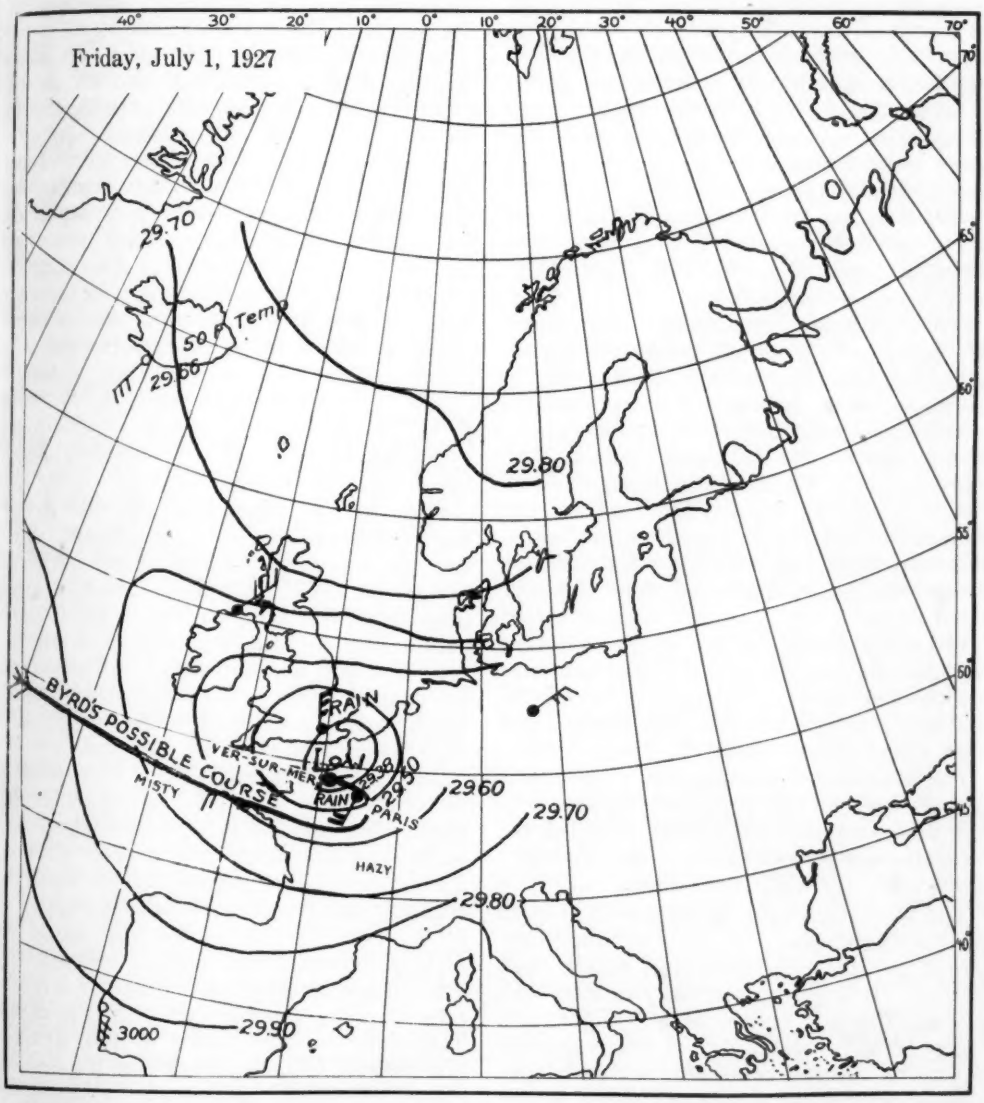


Chart No. 8. Byrd's Landing. Weather Data courtesy of U. S. Weather Bureau. Barometer—inches; wind—Beaufort scale; temperatures—Fahrenheit. The chart shows Commander Byrd to have landed in the center of a storm of 29.38 inches pressure. Such a center is accompanied by strong shifting winds, low hanging clouds and heavy rain. Weather at this time was completely overcast and squally over all of France, the British Isles and western Germany. Under such conditions dead reckoning navigation would be no good and astronomical navigation impossible. The radio compass is the most dependable instrument for obtaining a fix under such circumstances.

Chart No. 7.—June 29-July 1, 1927. Conditions encountered by Byrd on his trans-Atlantic flight. The haze, fog and cross winds are apparent. Weather data courtesy U. S. Weather Bureau. Barometer in inches; winds—Beaufort scale; temperatures—Fahrenheit.

7. The effects of surface temperatures near freezing.

Volumes might be written discussing each of these points but only a brief dissertation of each is possible here.

In the first place, considering the present state of development of aviation, the weather along the proposed route is of primary importance to long-distance aviators. Wind conditions vary so greatly over the North Atlantic that, with the extra fuel that can be carried on the planes of today, the margin of safety is so small that it can be easily wiped out by unfavorable winds. Storm centers cannot be entered with impunity nor are low visibility conditions overcome without great difficulty. On the whole, it is not too much to say that for the present, the weather and weather information on a trans-Atlantic flight form the primary consideration.

While weather conditions over some oceanic routes are almost uniformly favorable, over the North Atlantic the aërial routes are not so favored. The five months, from May to October, are generally the most favorable, but this year, between May 1 and July 15, conditions have been favorable for an eastward flight across the Atlantic on only four occasions and for a westward flight but once. To demonstrate how advantage was taken of these days let us list them.

The most favorable day of all that was available for trans-Atlantic flight was the day utilized by Chamberlin and Acosta to establish a new world record for sustained flight (over Long Island).

The next most favorable day, with regard to good weather and high visibility but second with respect to the help afforded by favorable winds, was June 4-5, when Chamberlin made his flight to Germany.

The day which ranked next, with respect to absence of bad weather but which afforded greater help from tail winds, was May 21. It is hardly necessary to state that this was the date of Lindbergh's flight.

The least favorable day of all, both with respect to weather conditions and aid from wind direction and force on which a trans-Atlantic flight might be considered even possible from the weatherman's standpoint, was June 30-July 1, when Byrd was in the air.

For a westward flight, while the day of Chamberlin's flight might have been utilized for the westward hop had a plane of 4,500 statute miles radius been available, only May 4-5, when Nungesser and Coli were undertaking their ill-fated attempt, could be considered at all favorable. In fact, while a storm center was located on the route, the weather conditions were more favorable, as a whole, for the westward flight than they had been for ten years. This is the opinion of no less an authority than Mr. Charles Mitchell, forecaster of the Weather Bureau in Washington.

So with only five days of favorable weather during a period of two and a half months, good flying weather over the North Atlantic is at a distinct premium.

In addition, all of the flyers labored under the difficulty of incomplete weather information. In spite of the publicity given the several flights and efforts made by various agencies, only a small percentage of the ships en route on the days in question gave weather information in time to be of value. The following table is eloquent.

Flight	*Ships en route equipped with radio*	*Ships reporting*
Nungesser	26	6
Lindbergh	32	5
Chamberlin	29	6
Byrd	33	7

From a naval standpoint the two remaining points are the most important. The first is the value and necessity of aërial navigation. To the layman and to a large portion of the aviation world aërial navigation means dead reckoning. Even the few that know astronomical observations are possible believe that the flights of Lindbergh and Chamberlin demonstrate that such observations are not essential.

And the direct opposite of this belief is the truth. For example, take Lindbergh's flight. He had no navigational equipment other than compasses and a chart showing the courses to be steered. The winds he encountered blew almost directly parallel to his courses. While on the first leg of his flight he encountered a small southeasterly drift, this was compensated for by a northerly drift he encountered over the ocean. Therefore the only factor tending to make him deviate from his track was his steering error. Colonel Lindbergh is a superb flyer, trained in the hard school of the air mail pilot. Consequently his steering error was practically nil and his landfall was only three miles from the desired point.

Chamberlin, without navigational equipment and while probably almost as expert

a pilot as Lindbergh, was about 450 miles south of the great circle course to Berlin, when he sighted the *Mauretania* and was able to check his position by consulting a newspaper chart giving the approximate position of the ocean liners the preceding day. This undoubtedly was due to the failure of his compasses to function to his satisfaction and to other factors.

Had Lindbergh encountered the cross winds that Byrd did, the *Spirit of St. Louis* would have been blown off her course as far as was the *Columbia* in spite of the perfect piloting of the man controlling her destinies. And had Chamberlin encountered the poor visibility conditions that hindered Byrd and been unable to sight the *Mauretania,* it is almost certain that his courageous flight would have ended in disaster.

By no means, the least of the many services that aviation owes to Charles Lindbergh was the warning he issued to the aviation world in general, and to the many flyers about to attempt a flight to Hawaii in particular, that transoceanic flights, and more particularly the Hawaiian flight, should not be attempted without a skilled navigator and complete navigational equipment, by which, of course, he meant astronomical observations.

As an important aid to aërial navigation, information concerning the movement of the upper air would be of great value. The observations of wind velocity and direction at various flying altitudes should be collected and published in the form of pilot charts, similar to the pilot charts showing surface wind conditions and other information now published by the Hydrographic Office. Unfortunately, the information essential to the compilation of such charts is almost totally lacking, and there is no prospect of such information becoming available for some years. In all probability international coöperation will be necessary for the successful undertaking of this project.

The American flyers experienced on an average five hours and twenty-five minutes darkness over the ocean, sunset coming just after taking departure from Newfoundland and sunrise over the ocean about 500 miles to the eastward of Newfoundland. The remaining darkness for them was over Europe and adjacent waters, Lindbergh experiencing only a couple of hours while Chamberlin and Byrd "spent the night" above those waiting to receive them. Nungesser and Coli, on the other hand (according to assumption made), experienced about sixteen hours of darkness beginning in mid-ocean.

These factors, which cover only the navigation and weather features of transoceanic flying, indicate clearly that the problem is by no means solved; but the authors feel that within fifteen years, an aërial route across the North Atlantic will be regularly traveled. If the route is not a non-stop one along the great circle course, it probably will be from New England or Canada to the Azores and thence to Europe for the eastward flight, and from Europe to the Azores and thence to some point in the southern United States for the western flight.

In addition, the prediction is hazarded that the planes operating on these routes will be capable of arising from and alighting on the water. While the exigencies of war sometimes require a sacrifice of safety for a gain in performance, no such necessity exists in time of peace or for passenger-carrying planes.

It is most significant that all of the transoceanic flyers who lost their lives did so in landplanes while in no instance has a pilot engaged on a similar flight in a seaplane failed to be rescued when threatened with disaster.

Towers, Bellinger, Locatelli, Rodgers, Snody and De Pinedo flying in seaplanes were all saved. Nungesser, Coli and St. Romain flying in landplanes have disappeared and probably have paid for their audacity with their lives. The action of the French government, in forbidding any of its official planes to attempt over-water long-distance flights without flotation gear, is a positive indication that future commercial development in transoceanic flying will concern mainly that symbol of safety—the seaplane.

DISCUSSION

Incentive in the Junior Grades

(See page 962, September, 1927, PROCEEDINGS

ENSIGN HARRY WAGNER, *U. S. Navy.*—While reading Lieutenant Commander Edwards' paper on this subject, I was moved to reflect upon my Naval Academy days which are only two years behind me. We all know that "old 2.5 spirit" which at times is so prevalent among the midshipmen. It is an evil that is the despair of the instructors, the "alibi" of some midshipmen, and the downfall of many potentially good naval officers who never attain the rank of ensign. You ask why it is that a man imbued with this spirit could ever make a good naval officer? It is because he does not possess a natural aptitude for the subject in which he betrays the "2.5 spirit," he is not brought to understand the importance of such knowledge to the naval officer, and, as a result, slumps along, barely maintaining a passing average—sometimes, however, he slips, and, as a result, finds himself in the great outside world. I bring in this analogy because it seems to me that a greater interest among junior officers could be inculcated while these same officers are still midshipmen. True enough, the change in outlook and perspective is very noticeable in the days of transition from midshipman to junior officer, this change becoming increasingly noticeable as the years go by, but it is a certainty that there should be a greater desire among all junior officers to exert the very best that is in them at all times.

It is my hope that I can bring to this subject the outlook of the average junior officer who has been in the "steerage" of a large ship for a year or more and has not yet lost the perspective of that species of animal. Wherein, according to our lights, is it that a lack of incentive lies?

Since my graduation from the Academy, it has been my good fortune to serve under a number of very able officers, their capabilities naturally varying according to the men. I have found that under some of these officers I have been able to put forward much better efforts than under others. Naturally, I should put forth my best efforts at all times, yet it is evident that while working for X I have not done nearly as well as I have working for Y. Looking back over the situation I ask myself what it is that has caused this difference in the number of ergs put forth for different officers. Of course, it is the fact that Y is a much better leader of men than X; Y understands better the method of getting the most out of us; Y more thoroughly indoctrinates us with the proper spirit of subordination and responsibility; Y lets us understand that we are answerable for certain functions of the machinery of operation and that results are asked for. At times we may fail Y in not coming up to his expectations; if so, the sense of failure is much keener than it would be if we had failed X, and the resolve never to commit the same mistake again doubly intense. It is said that leaders are born and not made, yet it seems to me that every man who has gone through the course at the Naval Academy can profit through the examples set before him in those years and during the following years as a junior officer. Naturally as a junior officer he has a great deal to do with the handling of enlisted personnel and in that capacity he should learn a great deal by the trial and error method.

However, it is agreed by all of us that some men will always be better leaders than others. In that event, why not make the best use of the leaders we have in the Navy today? It is my belief that officers detailed to the Naval Academy should be selected with even greater care than they are at present. In voicing this belief to some officers

of ranks senior to mine I have always been met with the retort:

"Oh, but that is not a policy of the department."

Does this settle the matter once and for all time? Can a policy of the department never be changed? It is acknowledged that an extremely high percentage of instructors at the Academy are very conscientious in their efforts, but some men are not by temperament fitted for the task of instructing others. It seems to me that one of the most important jobs in the Navy is the teaching of these midshipmen, who are so soon to be officers and that no pains should be spared to do it in the most thorough manner possible. To be done thoroughly it must be done in an interesting fashion and that factor should be considered in assigning officers to the task. I know that some effort is made once the officers are assigned to the Academy to place them in the departments for which they are best suited, but occasionally a slip occurs such that, for example, there are far too many who are best fitted for teaching navigation and far too few who are qualified for teaching engineering. The correct answer for such a situation is:

"But just think how much those navigators detailed to engineering will learn about the subject."

Which is more important: that we allow one officer the time and opportunity to pick up a more modern knowledge of engineering than was taught in his Naval Academy days or that we give to scores of midshipmen whose minds are eager to grasp the subject *if properly presented* the opportunity to obtain a good start in their engineering education by giving to them the best instructors that we have? Of course midshipmen are young, it is easy to pick the flaws in a system when they have never been faced with the difficulties of handling the situation even as it is a very simple matter to play bridge from the side-lines after having looked at all of the hands.

Once the midshipman has passed on to the ranks of the junior officers, would it be a good policy to abolish examinations for promotion in those subjects for which the young officer has shown especial aptitude, this aptitude to be gauged by the marks attained upon his fitness reports? The Marine Corps is now using a system somewhat similar to this in the assignment of their officers to the Basic School, the Company Officers' School, and the Field Officers' School. It works out in such a manner that second lieutenants who are successful at the Basic School have only a few practical examinations to pass for first lieutenant, and so on up to the rank of major. Some will say that this system resolves itself into a modified form of examination. However, would not the suggested plan of qualification through experience with the practical be more valuable than the present plan of studying the theoretical? The whole success of promotion through the fitness report would, of course, be dependent upon the effort and thoroughness with which the fitness reports are marked. However, with the proper amount of coöperation from the heads of departments on board ship, the captain could assign a mark which would be a good indication of the junior officer's ability. Were this plan to be adopted, I believe all of us would take a much greater interest in our fitness reports with a consequent effort to better them at all times. In this there would be something immediate and definite to work for, there would be tangible evidence of the results of our efforts every six months. We have fitness reports at present and naturally we are interested in them, hoping to better them every six months, but the advantage of making really excellent marks is still somewhat hazy and not quite clearly formed in our brain. Perhaps this shows again the "old 2.5 spirit" in its later development.

There is no doubt that examinations have some value in that they require us to study the latest developments in our profession. However, if our tours of duty as junior officers are properly divided between the deck, the engineers, and communications, we will be enabled to keep up with the newest wrinkles in all branches. If the exigencies of the service have demanded that an officer remain in one branch only since his last examinations, it is only fitting and proper that he should be examined in the subjects that he has missed. This fact would make us all more eager to change our assignments at more frequent intervals from one department to another and cause more careful consideration to be given by executives to the assignment of junior officers to the various departments. Thus, even more than now, we would receive a greater all-round knowledge of our profession, giving us a larger field to pick from when we choose to devote our especial energies to

some one branch at a later date. It will be said that we are shifted as much as is humanly possible at present, but again I bring forth the old argument that if we saw some definite advantage to be derived from it all, not some thirty years hence, but within the succeeding few years, we would make much greater efforts to be detailed to as many branches as possible in this very interesting game.

Perhaps all of this, some will say, is definite propaganda on my part to relieve junior officers of the definite burden of examinations with their attendant months of cramming. The idealist maintains that if we, through our own initiative, keep abreast of our profession at all times, we will not be forced to cram. However, idealism and practice are usually so different. How many of us do maintain a perfect state of preparation such that we might take our examinations for promotion tomorrow if the call came? What is needed is the inculcation of a greater interest, the giving of a greater incentive, to promote the ideal state of being as nearly as possible prepared at all times.

The whole subject of promoting a greater interest among the junior officers of our service is something that requires the sincere thought of all hands. Discussion alone cannot do it; there is required some tangible incentive which will complement the spirit of patriotism and knowledge of duty well done. What that incentive may be must be worked out. It seems to me that the suggestion offered by Lieutenant Commander Edwards is worth a trial, namely, the elimination of examinations in subjects in which a high grade has been made on fitness reports with a consequent greater importance attached to the fitness reports.

What is desired, now that the Washington Conference has limited the size of our Navy, is to make that Navy the most efficient in the world. As soon as the young man enters the Naval Academy he must be brought face to face with that fact. Great strides in this direction have been made there in the past few years to the momentary discomfort of the midshipmen concerned, but to the ultimate good of all. After graduation, the newly-made officer comes out into the fleet filled with "wim, wigor and witality," and an eager desire to learn what it is all about. Do we intend to maintain this interest or allow it to slacken for lack of incentive? It must be maintained if we are to have that "most efficient Navy in the world."

The Suicide Flotilla

(See page 661, June, 1927, PROCEEDINGS)

The Editor has received the following comment from Commander G. W. Kenyon, U. S. Navy, who was in command of the U.S.S. *Warrington* during the December, 1917, storm:

DEAR SIR:

I have read with pleasure and enjoyment the article entitled "The Suicide Flotilla," by Lieutenant H. F. Breckel, U.S.N.R., contained in the June, 1927, PROCEEDINGS.

I note, however, a few errors of fact contained in the last paragraph, first column, Page 668, which I wish to correct.

I quote from my diary:

December, 1917.

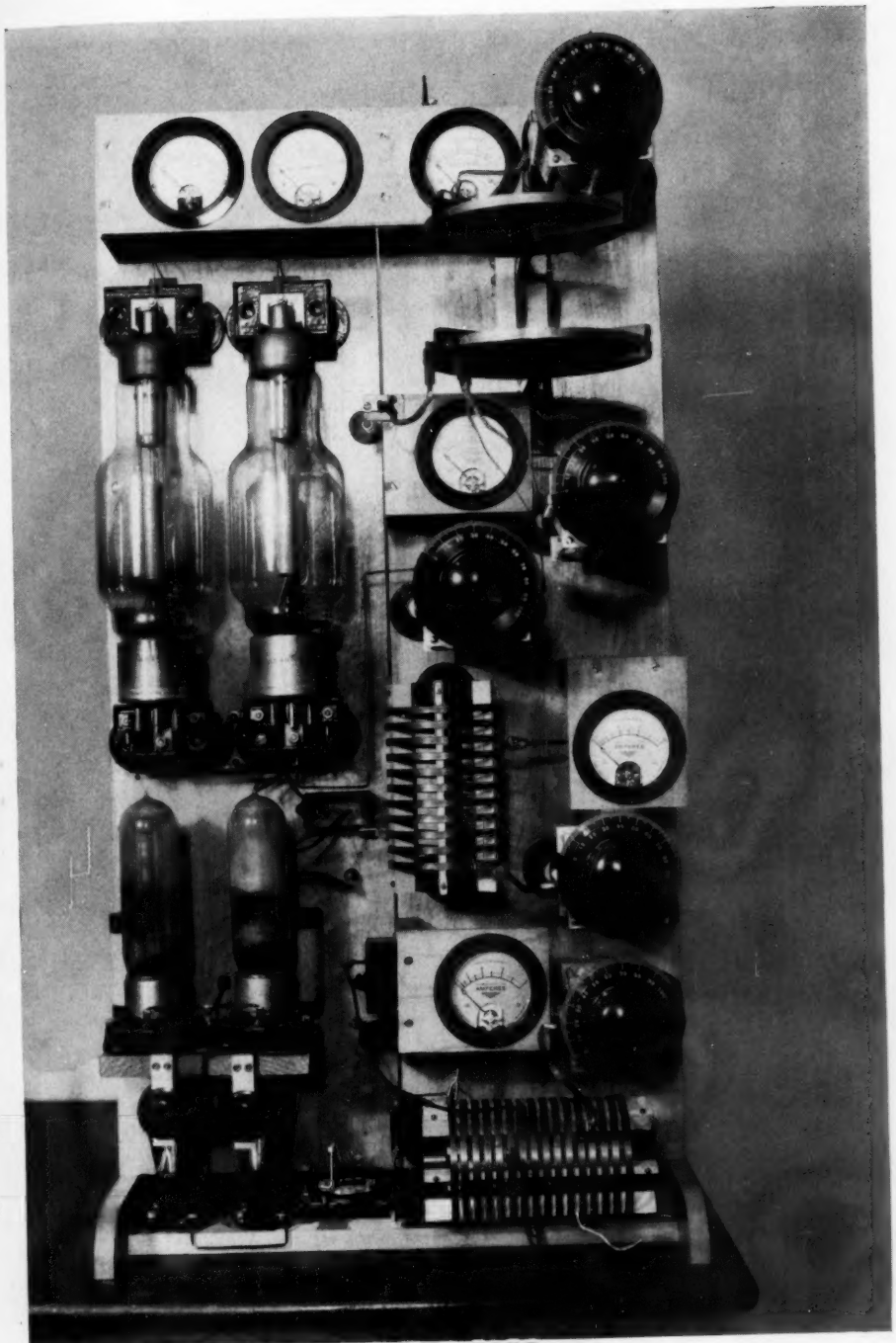
Saturday, 15—Underway at midnight with *Corsair, Roe* and *Monaghan*. Anchored at Quiberon at 9:00 A.M. Conference on *Matawaska* and lunch with Commander Watson. Underway at 2:00 P.M. Convoying *Matawaska, Occidente* and *Lenape*. Escort Commander, Kittinger. Headed west at fourteen knots.

Sunday, 16—Headed west. Sea getting rougher all the time. About 3:00 P.M. *Corsair* forced to turn around. At 6:00 P.M. *Roe* lost a mast and turned around. During night sea very rough.

Monday, 17—Sea very heavy with strong gale. *Monaghan* lost mast and boats, and turned about 6:00 A.M. We *(Warrington)* lost life boat, all rafts, spud lockers, lathe, bridge ladder, etc., and turned around at 8:30 A.M. Reported leaving to *Matawaska*, but received no reply from her. For the next twenty-four hours made eighty-seven miles good.

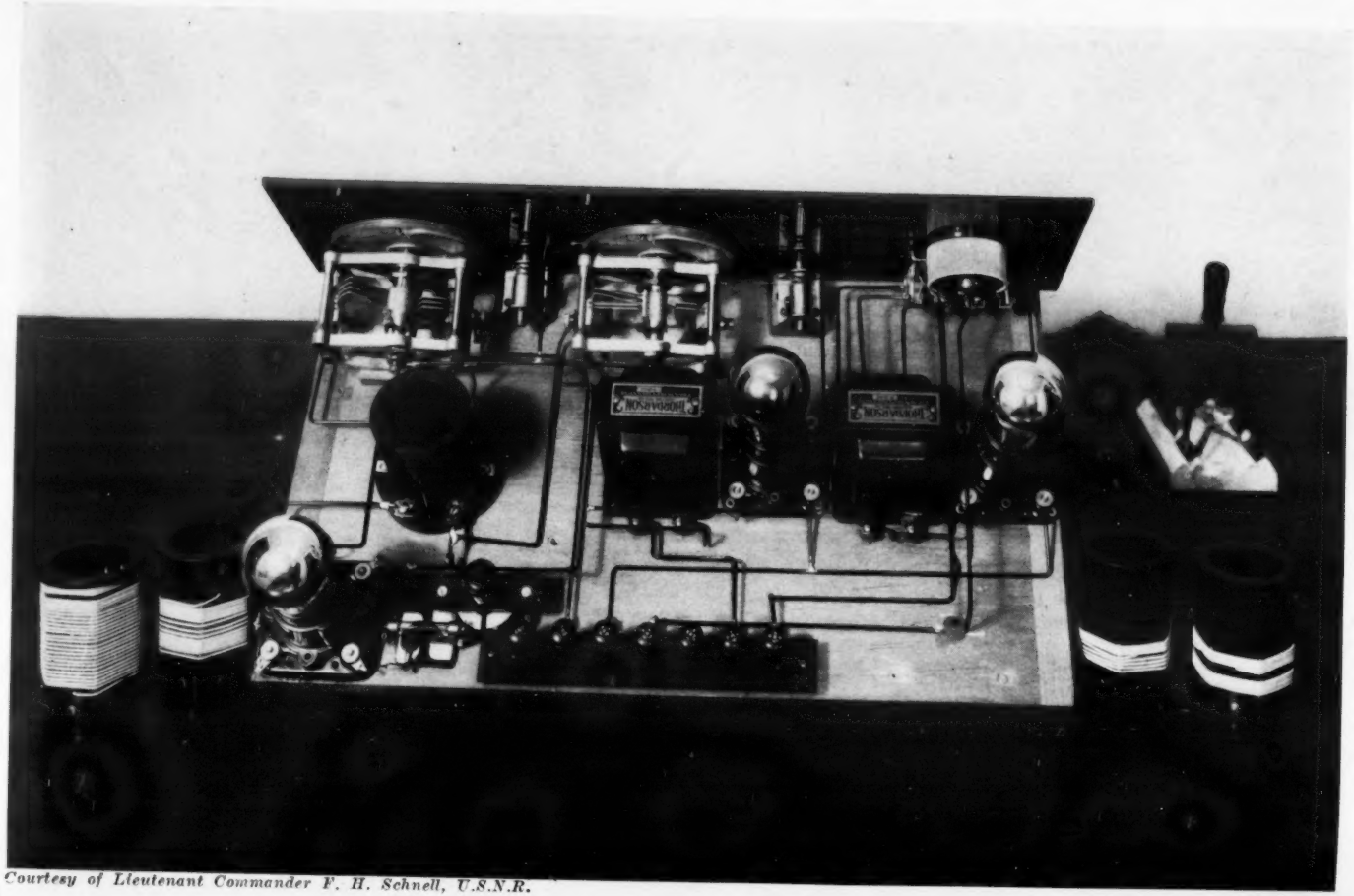
I note the same error on Page 150 of "The *Corsair* in the War Zone" by Ralph D. Paine.

While I believe that all credit is due to the *Corsair* for her good work during the war, I also believe that she would not want to take any that might belong to other ships.



Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

THE PRESENT NRRL TRANSMITTER, USING CRYSTAL CONTROL AND FULL WAVE 60-CYCLE RECTIFICATION. NRRL IS USED IN NAVAL RESEARCH WORK. See page 965.



Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

INSIDE OF THE PRESENT NRRL SHORT WAVE RECEIVER. FIVE COILS COVER A RANGE 12 TO 120 METERS. See page 965.
Lieutenant Commander Schnell has been allowed to retain his call letters "NRRL" to employ in his work of training the amateurs in the Naval Reserve.

Courtesy of Lieutenant Commander F. H. Schnell, U.S.N.R.

INSIDE OF THE PRESENT NRRL SHORT WAVE RECEIVER. FIVE COILS COVER A RANGE 12 TO 120 METERS. See page 965.
Lieutenant Commander Schnell has been allowed to retain his call letters "NRRL" to employ in his work of training the amateurs in the Naval Reserve.

PROFESSIONAL NOTES

1 JULY TO 1 AUGUST

COMPILED BY
LIEUTENANT COMMANDER W. G. GREENMAN, U. S. NAVY
AND
ASSISTANT PROFESSOR HENRY BLUESTONE, U. S. NAVAL ACADEMY

GREAT BRITAIN
War-time Gunnery 1004
Disarmament 1004
Functions of the Royal Indian Navy 1004
The World's Ship Building and Marine Engineering 1005

FRANCE
Recruiting of Seamen 1006

JAPAN
Japanese Control of Western Pacific 1008

ITALY
Italy's Population Needs Outlet for Peace 1009

ENGINEERING
Experiments on Propellers Having Blades of Aërofoil Section 1010

RADIO
Success of Beam Wireless 1014

AVIATION
Curtiss Builds Largest All Metal Bomber 1014
Navigation Lights 1017

MISCELLANEOUS
Safety of Life at Sea and Lifesaving 1018

CURRENT BOOKS AND ARTICLES 1020

GREAT BRITAIN

War Time Gunnery

Naval and Military Record, June 22.—The particulars given in the recently-published *Harper Record* regarding the gunnery at Jutland appear to be widely regarded as new, whereas in point of fact they are as old as the official version issued by the Admiralty. However, they lead to some interesting conclusions upon the general subject of naval marksmanship in action. During the Jutland battle the total British expenditure of ammunition was 7,732 projectiles, and 85 torpedoes. The smaller German Fleet got off a much higher proportion, firing 10,479 shells and 107 torpedoes. The losses on both sides were: British, fourteen vessels; German, eleven vessels. Curiously enough, this works out at exactly the same percentage, namely, one ship for every 700 rounds fired. As a criterion of marksmanship, however, this method of appraising results is valueless. Our most serious losses were in the battle-cruiser action, before the main fleets made contact at all, and it is quite certain that the number of shells fired at the *Queen Mary* and *Indefatigable* before they blew up was very much smaller than the average named. Earl Jellicoe, in his own account of the battle, writes, "At the commencement the fire from the German vessels was rapid and accurate, the *Lion* being hit three minutes after fire was opened, and the *Lion, Tiger,* and *Princess Royal* all receiving hits by 4:00 P.M." This was twelve minutes after the first shot was exchanged at 18,500 yards.

It has been suggested that our gunnery at Jutland made a very poor commentary upon the battle-practice returns of pre-war days. The comparison is rather a ridiculous one. Target shooting is, and always must be, so totally different from firing at a rapidly-moving and responding enemy that no similarity of standard can be set up. In gunnery practice, good results are deliberately sought by shooting under pre-arranged conditions. In action, rapid fire delivery soon produces the effect of daze and shakiness in men in a turret, which is probably thundering with outside concussion as well as reverberating with the blast of every discharge. The German fire, which was more intensive than our own, soon began to deteriorate. It has been said that ours showed a tendency to improve, but we are not quite clear as to what evidence this assertion rests upon. Seven hundred shells to the destruction of one ship will strike the uninitiated as a very extravagant number. Yet, in one of the earliest duels of the war, when the *Highflyer* caught the *Kaiser Wilhelm der Grosse* at a great disadvantage, she expended 600 6-inch shells in sending that huge, unprotected target to the bottom.

Disarmament

The National Review, July, 1927.—International Conferences on the thorny topic of Disarmament are liable to provoke so much ill-feeling either at the time or afterwards that these gatherings are becoming something in the nature of a diplomatic nightmare. Even when they seem successful at the moment, the aftermath is not always agreeable, as some power is sure to discover either that it was "done" by the original agreement or is being "done" through the interpretation of some co-signatory who is accused of "not playing the game." The Washington Naval Conference was a case in point. On that occasion the Washington Government produced a cut-and-dried program drafted by the American Secretary of State, Mr. Hughes, which Great Britain, Japan, and other naval nations unreservedly accepted in the belief that they were gratifying their hosts. Indeed, so far did the British Government carry its complaisance, that without authority from the British People, without a single debate in Parliament, or any discussion in the press or on the platform, the Anglo-Japanese Alliance was abrogated, with the painful consequences that stare us in the face throughout the Far East. It might be supposed that, having presented a project for curtailing navies that was adopted without material alteration by the Conference, the Administration as well as the American People would be enchanted with their achievement and would hail such a diplomatic coup as an eloquent tribute to their post-war prestige as the land of the rich and the prosperous. Not at all. From that day to this the Washington Convention has been constantly "sniped" from the United States by all sorts and conditions of men, including admirals.

Functions of the Royal Indian Navy

London *Times,* July 12.—Vice-Admiral Sir Herbert W. Richmond, late command-

ing the East India Squadron, was in the chair at a meeting of the East India Association at the Caxton Hall yesterday, when Mr. P. R. Cadell, late Commissioner of Sind, read a paper tracing the history of the Indian Navy, which, after three centuries of service under various designations, was last year transformed from its stage of existence as the Royal Indian Marine into the Royal Indian Navy. In this Mr. Cadell said that whatever efficiency it might attain, and however great the assistance it might fairly be relied on to give the Royal Navy, it was upon the latter that the security of India against external attack by sea must continue to depend.

The Maharajah of Burdwin said that, while it was an excellent idea that India should have a Royal Navy of her own, her main concern must be the defense of the long land frontier. She must rely chiefly on the Royal Navy to protect her shores and concentrate on the Frontier, not forgetting the "Red" menace.

The Chairman said that the defense of India must not be looked upon as merely territorial; it was not a question of protection from invasion alone, but of the defense of all her interests, one of which, vital to the prosperity of the country, was a seaborne trade valued last year at over £400,000,000. It might be that the Royal Indian Navy could not take a very large share in the defense of those interests by sea, but there were a great many useful services the sloops of the Indian Service could render in both peace and war.

The World's Ship Building and Marine Engineering

Engineering, July 15.—The improvement in the position of the British shipbuilding industry which we were able to record on page 462 of our last volume for the first quarter of the year has been continued during the quarter just completed, the returns issued by Lloyd's Register showing that the tonnage under construction on June 30 last was higher, by 173,456 tons, than the corresponding figure for the end of March. At that time, 297 vessels, making 1,216,932 tons, were in hand in this country, whereas, by the end of June, the number had increased to 316 and the tonnage to 1,390,388. The latter figure, it may be mentioned, is 549,050 tons higher than that for a year ago, although still some 500,000 tons lower than the average figure for the period immediately preceding the war. A satisfactory feature of the present situation is that the incubus of vessels in the yards on which work has been suspended is being gradually removed; it now amounts to only 8,745 tons, as compared with 77,600 tons at the end of June, 1926. On the other hand, we note, with regret, that the new tonnage commenced during the quarter just completed shows a considerable reduction in comparison with that laid down during the March quarter, the figures being 437,112 tons and 579,839 tons, respectively. The tonnage launched during the June quarter, viz., 268,545 tons, however, shows an increase of 140,798 tons over that launched during the previous three months.

Of the vessels now in hand in this country, 203, with an aggregate tonnage of 758,162, are steamers, and 98, making 627,700 tons together, are motor-ships, so that the latter account for more than forty-five per cent of the total. The tonnage now building in other countries amounts to 1,450,157, which is about 97,000 higher than the figure for the end of March. The present foreign tonnage, it will be noted, is some 60,000 tons higher than that building in this country. Our principal foreign rivals, in order of magnitude of tonnage in hand, are Germany, with 407,620 tons; Italy, with 226,774 tons; Holland, with 171,825 tons; the United States, with 146,846 tons, and France, with 136,474 tons. Of the total tonnage building abroad, 608,647 tons is accounted for by 167 steamers and 831,895 tons by 170 motorships. There are thus no less than 268 vessels of the latter type, with an aggregate tonnage of 1,459,595, under construction in all parts of the world, as compared with 370 steamers, making 1,366,809 tons together.

This, it is interesting to note, is the first occasion on which Lloyd's Returns have shown the tonnage of motorships building to exceed that of steamers. It should be pointed out, however, that the tonnage figures quoted above refer to the gross tonnage in all cases, and the returns from which they have been taken do not include vessels of less than 100 gross tons.

The available statistics of marine engines under construction in all parts of the world do not include steam turbines building in

Germany, but, neglecting these, it appears that the horsepower of marine-oil engines being built is greater than that of both turbines and steam reciprocating engines combined; machinery of the latter class actually accounts for about twenty-nine per cent of the total horse-power building, and steam turbines for about seventeen per cent, the proportion of oil engines thus being about fifty-four per cent. The total horse-power of oil engines under construction, or being installed, for the propulsion of sea-going vessels amounts to 1,102,424, of which Great Britain and Ireland are building 373,587 h.p., Italy 192,940 h.p., and Germany 151,460 h.p. The world's total figures for steam engines and steam turbines are 580,600 h.p. and 338,050 h.p. respectively, although, as previously stated, the latter figure does not include the marine steam turbines building in Germany. Of the steam machinery now in hand, reciprocating engines with a total horse-power of 376,595, and turbines developing 189,600 h.p., collectively, are being constructed in this country.

FRANCE

Recruiting of Seamen

Journal de la Marine—Le Yacht, March 12, 1927.—Monsieur Georges Leygues, Minister of the Navy, has just introduced a bill for the recruiting of naval forces and for the organization of such reserves.

Unlike the Department of War, the Navy has not, until now, had a special law to that end. The provisions applicable in the matter must be sought in the Acts of 1896, concerning "maritime enrollment";* of 1913, concerning enlistment and reënlistment in the naval forces; of 1922, concerning military obligations of students of maritime schools; of 1923, concerning the recruiting of the army. It is well that the law intended to replace these various provisions should include all that pertains to the subject. It should be said, furthermore, that since 1905 studies have been undertaken with that object in view but that they resulted only in voting laws intended to meet, on certain particular points, the needs of the moment.

* Under this law, all persons professionally engaged in navigation, so far as the tide reaches, are liable to service in the navy.

As is well known, the naval forces are recruited by three means: levy of maritime recruits, voluntary enlistment, and the call of young men known to have aptitude for the service and assigned to the naval forces either upon their request or without it. There could be no question of suppressing any of these sources of recruitment. The Bill retains particularly the "maritime enrollment," although its relative importance has considerably decreased.

From the Seignelay Decree of 1689 to 1840, the "maritime enrollment" system furnished on an average sixty-seven per cent of the crews of the Navy. For more than eighty years, this proportion has not ceased to diminish. This fact is due to two causes: the reduction in the number of merchant marine sailors and the increase in the number of men in the Navy. While the number of the "enrolled" drafted for the service of the Navy was still 5,500 in 1898, it had already fallen to 3,470 in 1913. However, during that same period, the total of men in the Navy had risen from 44,000 to 66,000.

The yield of the three sources of recruiting during the years 1922, 1923 and 1924 was annually on an average 4,285 men from "maritime enrollment," 4,778 men from voluntary enlistment, 6,189 from the annual contingent. Thus, maritime enrollment furnished only one-fourth of the men to be incorporated each year.

However, in order to compare the yield of the three sources, account must be taken not only of the number of men incorporated but also of the time during which these men remain under the flag. The "enrolled" men now complete three years of actual service, while those recruited are obliged to remain under the flag only eighteen months. The average annual yield of the first is therefore 4,285 multiplied by 3, or 12,855; that of the second, 6,169 multiplied by 1.5, or 9,253. The yield of the levy is therefore higher from the point of view of quantity. We shall add that in point of quality and, however marked, the good will of the recruits, the men of the "marine enrollment" are decidedly superior. Two years' service represent the minimum period for the military and nautical training of a good sailor, particularly for inland recruits. The adoption of one year's service, which is surely coming in the near future, must inevitably accentuate that superiority.

The call of the contingent cannot be considered in the Navy otherwise than for such duties as do not require any maritime knowledge, and even so only strictly to the extent that shortage in other sources of recruiting makes it indispensable. As the number of men in the "maritime enrollment" does not depend on any outside circumstances, the efforts of the Ministry should tend above all to increase the number of volunteers. But the means at his disposal have not as yet brought any marked results in that respect. The causes influencing the number of volunteers are particularly of a political and economic order. Thus we notice two high points in the curve of enlistments for the last twenty years. In 1913, 6,575 young men enlisted in the crews of the Navy for periods of from three to seven years; in 1921, 8,094 enlistments were signed for periods of from three to seven years. These exceptional figures may be explained as follows: the first, by the political situation created in consequence of the discussion of the three-years law; the second, by the economic crisis following the war. The pecuniary advantages accorded sailors by the Acts of 1923 and 1924 did not bring the expected increase in enlistments. As properly pointed out by the Minister in his statement on the subject, they apparently had the effect to prevent the number of enlistments from decreasing. Had not these advantages been offered, it would have been necessary to have recourse to the means of recruiting even to a greater extent.

On the whole, then, the progressive decrease in the term of service in the army had as an inevitable consequence, for the time being at least, to bring to the Navy a large number of men serving for a short period. The result is an indisputable lowering in the personal and professional value of the Navy's crews. "The remedy for this situation," writes the Minister, "is to be found not in an increase in the required term of service but in a return to a professional Navy."

We have maintained this idea too often in these columns not to rejoice at seeing an official document devoted to it.

The Bill limits to three years, instead of to five, the active term required of the "enrolled" class; that is to say, it approves the measures applied since the war, which have practically reduced the term from five to three years. The "enrolled" class will, after these three years, pass two years as "available" *(en disponibilité)*, five years as first reserves and eight years in the second. However, upon completion of the term of service required of all Frenchmen, they will, thereafter, be entitled to all the advantages accorded to volunteers. That is logical.

It would seem highly important to check, if possible, the constant decrease in the number of the "enrolled." This object could probably be attained by granting seamen special advantages as was done in the seventeenth century. It must not be forgotten that such advantages as are now enjoyed by them have lost a great part of their value owing to the progress made in social legislation. Sailors, whether in the military or in the merchant marine, are entitled to special consideration because they lead a harder life than most people belonging to other professions. However, this question is beyond the scope of the present article, and its solution does not depend alone on the Ministry of the Navy. We shall limit ourselves for the present to pointing out its importance and expressing the hope that it will be studied with open mind and open heart in the interest of both military and merchant marine seamen.

The Bill contains, with regard to petty officers, to crew reserves, and to complements, a great number of provisions improving the present situation so far as possible without requiring appropriations. These provisions cannot, however, be given here for lack of space.

Auxiliary officers are suppressed. The new organization will render it possible to divide all merchant marine officers subject to mobilization into two distinct classes: reserve officers and those specially assimilated. Merchant marine officers maintained or embarked aboard a ship intended only for transportation will receive a special rank, more or less high, according to the importance of their duties and in harmony with the ranks of the military organization, but with a distinct designation intended to obviate confusion.

Ranks of reserve officers will be established in all these corps. The Bill particularly gives legal authority to the creation of an Officers' Corps of interpreters and calculators, as well as a corps of dental

surgeons, the neeessity of which has been demonstrated, it seems, by experience in the last war and the number of which will, furthermore, be very small. It may seem surprising that a recruiting law should include provisions concerning ranks of the complement. The Minister explains that he was led to do so by the desire to include in one Act all provisions establishing the military status of the personnel of the merchant marine, including officers. Furthermore, this method of procedure seemed best to bring about an earlier solution.

After all, the matter has little importance. The essential point is that all possible measures be taken, whether budgetary or such as are to be initiated by Order of the Administration of the military personnel, to assure the Navy as large a number of enlistments as possible, even if the pecuniary sacrifices involved are high.

The professional Navy is becoming a necessity which is less and less subject to discussion, and nothing should be neglected to establish it with as little delay as possible.

COMMANDANT A. THOMAZI

JAPAN

Japanese Control of Western Pacific

The following article, written by Baron Sakamoto, was recently published in the *Diplomatic Review* under the title of "In War and Peace Maintain Control of the Western Pacific and Especially Guarantee the Lines of Communication with the Asiatic Continent." The author is a retired rear admiral who served on the general staff and on the Japanese delegation to The Hague and London conferences.—ED.

Once the emergency comes, while we may be able to keep control of a part of the Pacific, we must expect our lines of communication around Taiwan and to the west coast of Chosen will be threatened by the activities of the enemy's submarines.

We must maintain a supply of 700,000 tons of rice (the annual shortage) over the home production, as well as other necessities of life and of iron and fuel to carry on the war. This must come over the Japan Sea, so we must keep our lines of supply open through Chosen to the Asiatic Continent. These lines are indeed of vital importance to the Empire—the fate of the nation depending on them. Therefore, we must, at all odds, maintain the security lines of communication to Chosen.

We must close the Tsugaru and Soya Straits and thus make the Japan Sea our own "pond." Only in this way could we carry on the war.

Suppose we have been able to keep the lines of supply open through the Japan Sea, the next question is that of transporting supplies from far inland to points on the Japan Sea and thence to Japan. This brings up the point of railroads in Manchuria and Mongolia, terminal ports, and navigation across the Japan Sea.

The abundance of resources in Manchuria and Mongolia is well known. A broad discussion of railroad development there is beyond the scope of the present discussion, and we shall consider here merely the points that concern lines of communication between the continent and the Japan Sea.

Supplies from Manchuria and Mongolia can be transported over the South Manchuria Railroad and over railroads in Chosen to Fusan or Genzan and thence to our northern ports. This, however, is a roundabout way and it is more economical and quicker to short-cut the Chosen Peninsula and ship to Seishin or Rashin upon the completion of the Kirin-Kainei Railroad.

If we are to obtain our supplies from Kirin by the present routes, namely, via Mukden, Keijo, Fusan, thence by ships and home railroads to Osaka, it means transportation over a distance of about 2,400 miles, whereas over the Kirin-Kainei line to Seishin, and thence by ships to Tsugaru and then by rail to Osaka the distance is reduced to only 900 miles.

The Kirin-Kainei Railroad is an uncompleted line, to be 270 miles in length, when completed, and connecting Kirin in Manchuria and Kainei in Chosen. About 1909 the Japanese Government, in exchange for the recognition of Chinese sovereignty over Kanto (a district bordering on the northeastern frontier of Chosen), obtained the right to construct this railroad and a loan was made through our Industrial Bank. Under the contract the line should have been completed long ago, as the work on the first 130 miles between Kirin and Tonka is now started and it is said to be the plan when the road is completed to permit the South

Manchuria Railroad Company to operate the line, as in the case of the Kirin-Chungchun line.

As for the Japan Sea terminus, Yuki, Seishin, Rashin, and others are mentioned, but nothing definite has yet been decided. Each port has its own advantages and disadvantages, the situation being:

(1) Viewed from the suitability of the land area facing the port—Seishin first, then Yuki, then Seibanpo.

(2) Viewed from the suitability of the harbor—Rashin first, Yuki next, then Seishin.

(3) Viewed from the adequacy of water supply—Yuki first, Seishin next, then Seibanpo.

All things considered, Rashin is believed to be the most suitable for building a terminus.

The Kirin-Kainei line, by virtue of its being a short cut from Chungchun (northern terminus of the South Manchuria Railway) to the Japan Sea ports, may not be looked upon with favor by that company, and this in a measure is responsible for the slow progress on this new line. However, from the standpoint of our national defense and of economic advantages, it is earnestly hoped that the completion of this line will be shortly effected.

As a terminal port in northern Chosen, it occupies a position similar to the axis of a fan; steamship routes diverging from there to the following seaports of Japan: Otaru, Hakodate, Funakawa, Niigata, Tsugaru, Maizuru, Sakai, and Hamada. The distances from the north Chosen port to these ports average 470 miles.

When we consider the advantages thus offered in the importation of supplies from North Manchuria over the Kirin-Kainei line and through the chain of ports named above, I believe that the interests of a company, such as the South Manchuria Railway Company, must be subordinated to considerations of our national defense, and to economic advantages to the nation as a whole.

There is a project now in hand for building a railroad net in Chosen, extending about 1,000 miles, costing 320,000,000 yen, to be completed in ten years, beginning the year 1927-28. The object of this program is, of course, the development of natural resources of Chosen, yet we cannot overlook the immense advantages it offers as a military asset. The lines coming under this program are as follows:

	Miles
Tomon line (Yuki to Dokan)	97
Keizan line (Joshin to Keizan)	88
Tokai line (Genzan to Hoko) (Urusan to Fusan)	341
Keizan line (Fushu to Zenshu) (Inson to Tanyo)	156
Mampo line (Junsen to Mampo)	178

With the completion of the above railroad net, the Government intends to purchase several private existing lines and convert them to broad-gauge lines. The private lines to be purchased are:

	Miles
Keinan line (Masan to Fushu)	43.5
Zenan line (Shotei to Ritan)	22.7
Keito line (Taikyu to Kakusan) (Seigaku to Urusan)	92.0
Riri to Zenshu	15.5
Kainei to Dokan-chin	36.1
Total	209.8

Of the lines being projected, the Tomon line is for the development of coal fields in the northern part of Chosen. The Kaizan line is for carrying lumber from the mountain regions of Kankyo-Hokudo and Kankyo-nando to ports on the Sea of Japan. The Tokai line is for developing coal mines in that district. These lines are to be started in the early part of the next fiscal year (1927-28) and I hope that these lines, together with the Kirin-Kaini line and its terminal port, will be completed as soon as possible, so as to better our system of national defense.

ITALY

Italy's Population Needs Outlet for Peace

Baltimore *Sun*, July 31.—Italy's swelling population may force her into a position in which war will be her only hope, Professor J. O. Beaty, of Southern Methodist University, declares in a report sent from Rome to the board of trustees of the Kahn Foundation for the Foreign Travel of American Teachers.

Italy, however, does not want war, asserts the report, made public at Columbia

University by Frank D. Fackenthal, secretary of the board. Professor Beaty, Kahn fellow for 1926-27, discussing "What Italy Wants," adds:

"Italy feels entirely capable of regulating her home affairs. She will prepare her homeland to hold as many Italians as possible, but she is proud of the racial vitality which gives her a population increase of half a million every year, and she must look in the not-too-distant future for an outlet.

"The war was no help in this way. The 'liberated' regions were fully populated. Italy does not see why other countries with no excess population to emigrate or no people who wish to emigrate should hold fertile vacant spaces to which she could send surplus people.

"She does not recognize as sacred the territorial rights of peoples who happened to take land when she was engaged with her unification. If the nations of the world want peace, they should certainly before many years show Italy what she is to do with her surplus people.

"Even if peace can be maintained under present conditions, it would be a racial tragedy to force down the Italian birth rate and stem the vigorous tide of white humanity which Italy is producing."

There is no probability of war between Italy and France, Professor Beaty thinks.

"Six of Italy's ten corps areas are near her land frontiers, but that is only natural," he says. "Her compulsory and universal service, except in the provinces, of eighteen months does not seem exceptional in Europe.

"There are doubtless justifications in the value of the physical training which is now being emphasized, in the educational value of the service and perhaps in the question of employment. Moreover, Italy is poor in three of the great necessities of war—coal, iron and oil.

"The Italians and the French may experience some surface irritations, but I cannot think they would risk a war which would probably mean almost the entire destruction of both nations.

"It is said that Mussolini has greatly improved the morale of the Italian Army, but an easy conquest of France is unthinkable for any power in the world. The only way Italy could ever hope to win a war with France would be to block the Alpine routes and destroy the French fleet.

"In my opinion, Italy may be considered to have no intentions of war with France—unless she should begin a feverish naval program. A war scare is unfortunately one of the best ways of strengthening a government and arousing patriotism. Its dangers, of course, lie in it going farther than was intended."

Professor Beaty believes that "the Fascist Government is making every effort to stand by the church and also to enlist its help."

"Walls receive only two types of bulletins—those of the Fascist party and those of the church," he continues. "I hear again the rumor that the next Pope will not confine himself in the Vatican.

"Dancing was prohibited this year during Holy Week. The most recent significant Fascist gesture was the unveiling in the Coliseum of a cross with the inscription on it *'Ave crux, spes unica.'*

"The next day an inspired journal said: 'Yesterday's ceremony is a logical consequence of the new political orientations which intend to maintain not in contempt but fraternally united the faith in religion and the faith in the country.' "

Order and discipline seem to be the watchwords, according to Professor Beaty.

Education, Professor Beaty observes, is directed toward inculcating a love of Italy.

ENGINEERING

*Experiments on Propellers Having Blades of Aerofoil Section**

BY PROFESSOR DR. ING. F. HORN

The Shipbuilder, July, 1927.—The method of screw-propeller design most widely utilized in practice is that based upon the results of systematic experiments with model screws, the principal dimensions being selected to correspond with optimum efficiency. A new method, however, has recently been made possible consequent upon the development by Betz and Prandtl of the theory of the aërofoil and upon its extension by von Bienen and von Karman. The aim of the theory, which has been successfully applied to air-screw design, is to define accurately the axial and tangential losses as well as those due to friction and eddy-making, and to arrive at the particular screw for which these losses are a minimum under the con-

* Abstract of paper read at the twenty-seventh annual meeting of the Schiffbautechnische Gesellschaft held in Berlin.

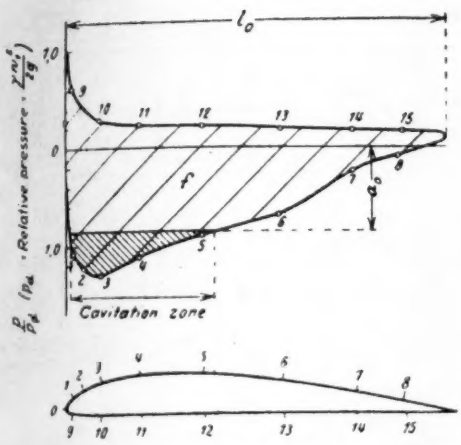


FIG. 1—DISTRIBUTION OF PRESSURE UPON PROFILE No. 389 AT *a* SLIP ANGLE OF 5.7°.

ditions obtaining. On the basis of the foregoing theory experiments have been conducted at the Berlin Experiment Tank.

The speed of the screw through the water is equal to the speed of the vessel less the average wake speed, the thrust being equal to the resistance of the ship augmented by the suction effect of the screw. These values must be estimated or determined by a preceding experiment. From these data the actual slip angle of the propeller may be found.

With the help of the theory, the pressure acting upon each part of a propeller blade may then be calculated. The distribution of pressure has been found to depend materially on the blade section. For propellers of usual proportions, blade sections as in Fig. 1 have been found to be favorable to good efficiency. Care has to be taken to avoid cavitating conditions, which may be investigated by special formulas.

The first experiments made by the author with screw propellers designed on the principle of the aërofoil were in connection with the propellers for the Prince Line motorships built by the Deutsche Werft for Messrs. Furness, Withy & Co., Limited. The principal dimensions of these vessels are:

Length	134.11 metres
Breadth (moulded)	18.29 metres.
Load draught (moulded)	8.34 metres.
Displacement, including shell and appendages, in sea water	15,250 met. tons
Designed speed	14.5 knots.
B.H.P. (total)	4,900
Revs. per minute	120

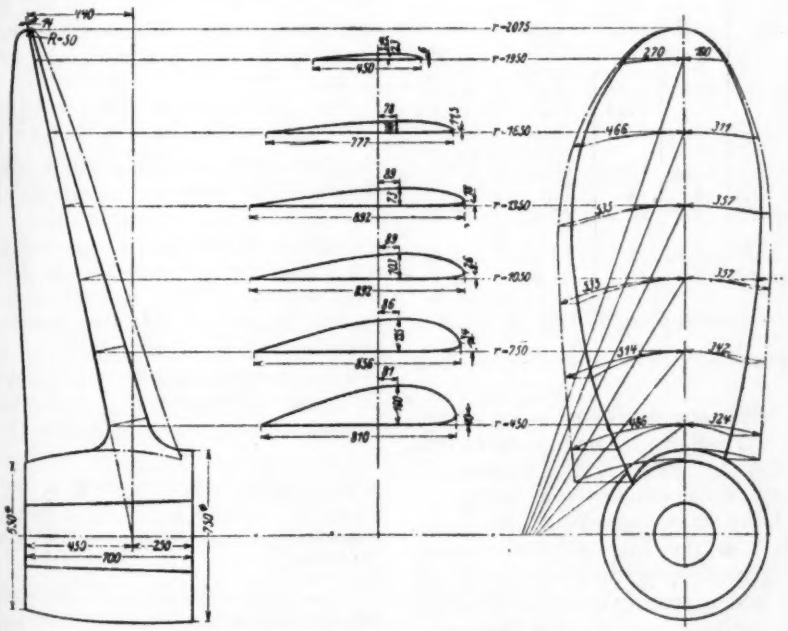


FIG. 2—PROPELLER NO. 265.

It was found from preliminary trials that for calculation purposes the thrust should be increased by about twenty per cent. Two model propellers, Nos. 252 and 265, gave satisfactory results as compared with a propeller of normal type and construction under

TABLE II.

Expt. No.	Propeller No.	Propeller Type.	E.H.P. (N_o)	S.H.P. (N_w)	R.P.M.	Propulsive Efficiency. N_o/N_w %	Nominal Slip. %	Advance Coefficient. $\frac{v_p}{nD}$**	Thrust Deduction. %	Wake Fraction (Taylor). %	Hull Efficiency. %	Propeller Efficiency.
1,144	221	Normal 4-Bladed	3,397	5,300	112.4	64.0	32.8	.690	20.1	29.1	112.6	56.9
1,265	222	Normal 3-Bladed	3,397	5,310	117.1	64.0	34.5	.671	20.2	27.2	109.5	58.4
1,392	222	Normal 3-Bladed	3,397	4,980	114.9	68.2	35.0	.667	17.8	29	115.7	59.0
1,397	265	Aërofoil 3-Bladed	3,397	4,813	120.0	70.6	33.0	.660	18.0	26.5	111.4	63.3

**v_p = Speed of propeller, *i.e.*, wake fraction $= \frac{v - v_p}{v}$

n = Revs. per minute.
D = Diameter.

open-water conditions. The principal dimensions and data of these two propellers, as well as of two others of normal type, are given in Table I. Propeller No. 265 is delineated in Fig. 2.

TABLE I.

Type of screw	Normal.		Aërofoil.	
Number of screw..	221	222	252 (narrow blade)	265 (wide blade)
Diameter (metres).	4.1	4.15	4.15	4.15
Pitch (metres)....	4.2	4.25	4.3 (average)†	4.08 (average)‡
Pitch ratio.....	1.025	1.024	1.037	0.984
No. of blades.....	4	3	3	3
Area of disc (sq.m.).	13.2	13.53	13.53	13.53
Area of blades (sq. m.).....	5.58	5.7	3.24	4.08
Disc-area ratio (%)	42.2	42.2	24.0	30.2

† Increasing uniformly from 3.79 m. at the boss to 4.65m. at the tip.

‡ Increasing uniformly from 3.80m. at the boss to 4.30m. at the tip.

Table II. gives the results of some of the experiments carried out. The first two (Experiments Nos. 1,144 and 1,265) were made "in the open," while the last two were carried out with the screws operating behind the ship model. In the case of Experiment No. 1,397, a tapered extension was fitted to the after end of the twin-screw bossing, in order to eliminate any eddying tendency. In connection with the fitting of these extensions, separate experiments were carried out to determine their most suitable form. Those which were symmetrical about the axis of the boss, *i.e.*, of equal taper both above and below, were found to be the best.

Three of the vessels were fitted with a propeller similar to No. 265, and one with a propeller similar to No. 222. In order to ensure accuracy of comparison, experiments were carried out on the models at the correct draught corresponding to the actual draught of the ships on trial. A comparison of actual trial powers with those estimated from model-experiment results showed that the former were about five per cent lower than the latter. The voyage results also agree well with the model-experiment results.

For equal strength, the propeller of aërofoil blade section has a weight about one ton less than one of normal type, due to the fact that smaller centrifugal forces are involved.

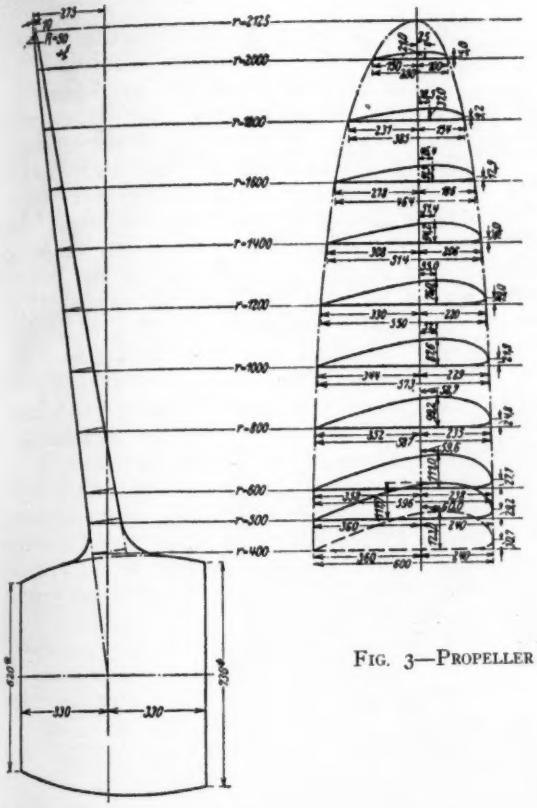
A screw of aërofoil type was also designed for a single-screw cargo steamship having a displacement of about 5,000 tons and a speed of 10.5 knots, the indicated horse-power being about 1,100. Comparative tests on aërofoil and normal propellers were also made in this case. The principal dimensions of the screws were as given in Table III.

TABLE III.

Propeller No.	270	271
Type	Normal	Aërofoil
Diameter (metres)	4.250	4.250
Pitch (metres)	4.500	4.619††
Pitch ratio	1.085	1.086
Area of disc (sq. m.)	14.19	14.19
Area of blades (sq. m.)	6.6	3.504
Disc-area ratio	.465	.247
Boss diameter (m.)	.730	.790
No. of blades	4	4

†† Increasing uniformly from 4.094m. at boss to 5.00m. at tip.

Fig. 3 shows the design of the screw. The narrowness of the blade as compared with that of the normal propeller (No. 270) is noteworthy. In open water, propeller No.



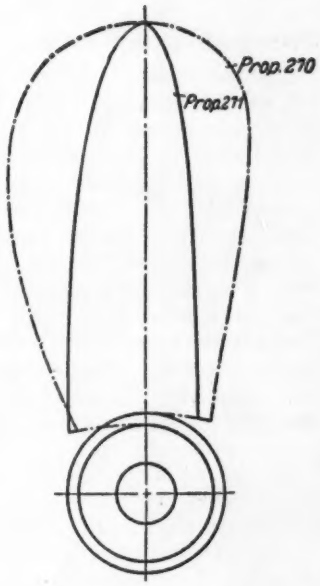


FIG. 3—PROPELLER NO. 271.

271 of aërofoil section proved to be slightly inferior to the normal. Behind the hull, however, with properly formed guide blades and in association with a rudder of stream-line section, the aërofoil propeller was the better by about three per cent. Unfortunately, these experimental results were not available at a sufficiently early date, and the actual screw propeller fitted was of normal design. The arrangement of the rudder, etc., may be gathered from Fig. 4.

Additional investigations have shown that the type of propeller under consideration may be favorably applied to cases in which the screws are required to run at high speeds.

The experiments outlined above have led to the conclusion that the aërofoil method is eminently suitable for the design of efficient screw propellers. In addition, its application has the merit that the prediction of propeller performance, particularly when running in open water, may be undertaken with increased confidence. Further tank investigations are needed to throw light upon the interaction of hull and screw.

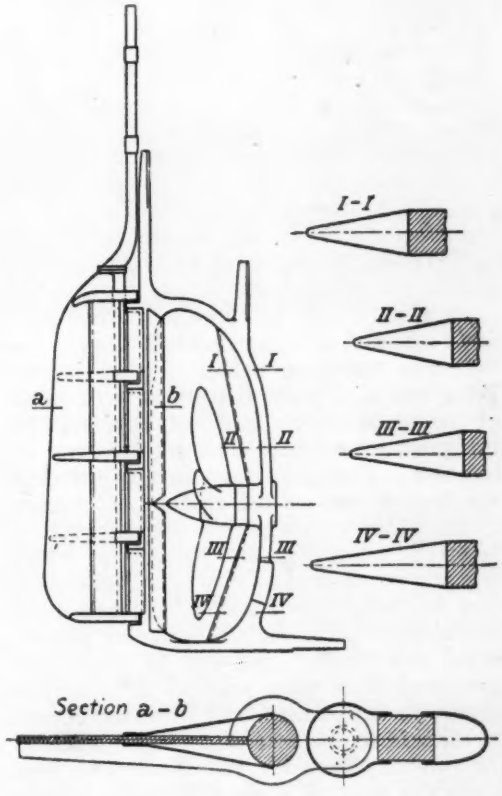


FIG. 4.

RADIO

Success of Beam Wireless

London *Times,* July 7.—The beam wireless service between England and Australia, which was opened in April, is stated by the Post Office to be developing satisfactorily, with increased business resulting from the success achieved. With the opening of the beam system between London and South Africa and that of the Anglo-Canadian service already in operation, the potentialities of wireless telegraphy are increased. There is no suggestion that the cable is being superseded. Inquiries show that, with the expansion of wireless, improvements are being made to increase the efficiency of cable communication.

At the Post Office the opinion is expressed that the cable and beam are complementary, and at the headquarters of one of the cable companies the view was taken yesterday that there is ample room for both systems. Modern life is producing a greater desire for quick communication, and, apart from an increasing number of messages at full rates, there is a growing inclination to take advantage of the daily letter telegram and the week-end telegraphed letter. The beam system, with its lower rates, is expected to play an important part in the development of the cheaper forms of communication, and experience already shows that it is attracting a considerable part of this business. But in regard to urgent traffic, which is estimated to be three times greater now than it was before the war, the beam system does not appear to have seriously affected cable services.

It was stated on behalf of the Eastern Telegraph Company that the introduction of the beam system had not interfered to any great extent with their total volume of business. The principal effect of wireless has been to reduce the amount of cheaper traffic which comes within the category of deferred telegrams, in regard to which urgency is not a vital factor. Communication by these telegrams at reduced rates provides work for the cables during periods when they might otherwise be idle. But compared with other sections it is not an important department, and when considered in relation to the total amount of work of the company does not represent more than a tenth of the full volume of traffic. Quite ninety per cent of the business of the Eastern Telegraph Company relates to full-rate messages, including those in code.

While the beam system, it was stated, appears to be attracting from the cable cheaper classes of traffic, it has not seriously affected, for example, the full-rate messages of a financial and commercial character, for which, owing to their urgency, rapid and efficient transmission is absolutely essential. "Good results are achieved by wireless in regard to both rapidity and efficiency," it was added, "but there are times when contunity of transmission is interfered with. It is constantly impressed upon us that more business and greater cable traffic result from quick and efficient telegraphic communication. There is no doubt that this is an accurate appreciation of the value of rapid service, and it is the certainty of continuous, as well as quick, transmission by the cable that favors the use of the cable in preference to wireless for messages of an urgent character.

"That does not mean that the beam system will not serve a valuable purpose. It will probably stimulate the desire for telegraphic communication and will have a share in the increased business. There are opportunities for both systems."

AVIATION

Curtiss Builds Largest All Metal Bomber

The "Condor," Twin Engine Bomber Gives Fine Performance Before Army Air Corps Officials at Mitchel Field, Long Island

Aviation, July 25.—What is claimed to be the largest all-metal bomber ever built in the United States was recently turned over to the Army Air Corps by the Curtiss Aeroplane and Motor Company, of Garden City, Long Island, New York. The "Condor" (XB-2) is a biplane powered by two Curtiss 600 hp. geared engines.

Following a thorough inspection at Mitchel Field, Long Island, by F. Trubee Davison, assistant secretary of war for aviation, and officers from Wright Field, the plane made its initial flights with Lieutenants Eugene Batten and Harry Johnson as the pilots. Though the first flights were short, both Batten and Johnson were enthused over the performance of the plane. Due to the increased efficiency of the geared propellers, the plane has an excellent climb with a com-

paratively short take-off. It has an estimated high speed of 120 m.p.h. and a cruising radius of 800 miles at approximately 100 m.p.h.

The Condor carries a crew of five men—one pilot, one bomber, and three machine gunners. The problem of the best distribution of this personnel in the airplane was given very careful consideration by Army Air Corps bombing experts and Curtiss engineers. The unique arrangement which was finally worked out is said to be one of the most satisfactory ever used in a bombing plane. The three machine gunners are so located as to be able to ward off attacks by hostile aircraft from any quarter. One is stationed at the nose of the machine, where his two Lewis guns command the entire area forward, above, or below the plane. The others, instead of being carried in the fuselage as formerly, are stationed in the rear part of the engine nacelles. This unique arrangement of the rear gunners provides an unrestricted area of fire to the rear. The fire of all three gunners can be made to intersect at any point a hundred feet or more distant from the plane, making it decidedly unhealthy for enemy aircraft to approach.

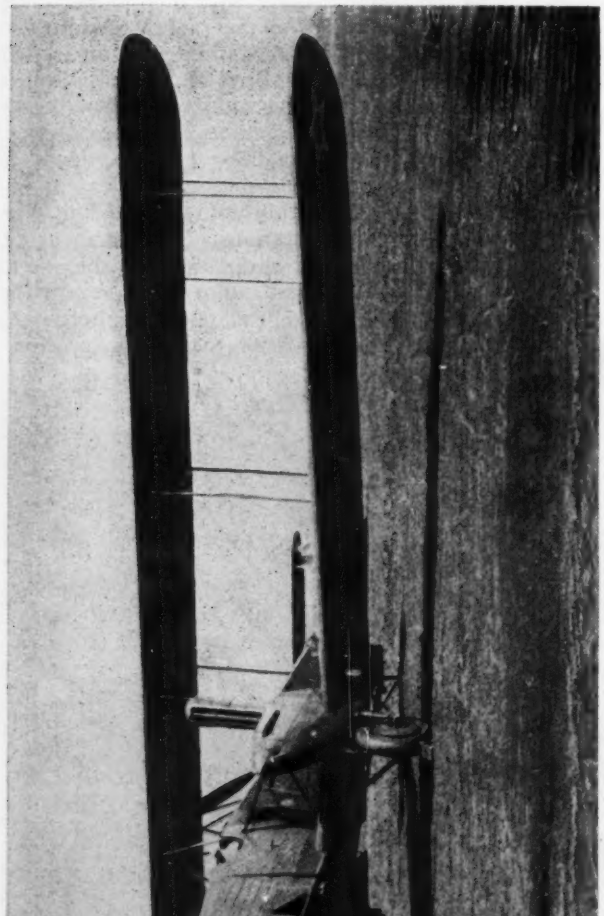
The pilot is located in the conventional position in the forward part of the fuselage. As the plane is fitted with dual side-by-side control, in case of an emergency or injury to the pilot, the bomber, whose station is just forward and below the pilot, can slip into the seat next to the pilot and fly the plane. Likewise, the forward gunner, in an emergency, can occupy the bomber's position, and vice versa. As the men in the nacelles can, in an emergency, climb into the cockpit, the personnel at all stations is interchangeable. The rear gunners do double duty, the one in the right nacelle as radio operator and the one in the left nacelle as photographer. Thus the Condor, in addition to its primary function, is completely equipped to carry out reconnaissance and photographic missions.

SIDE VIEW OF THE NEW CURTISS "CONDOR" ARMY BOMBER.

WEIGHT EMPTY IS 9020 POUNDS

Structurally, the Condor contains many features of interest. The entire structure is of metal, of which the greatest part is duralumin. The fuselage, tail and wing ribs are of duralumin, with the wing beams, motor mount, bomb bay, and other highly stressed parts of alloy steel.

It is of interest to note that the weight empty was 9,020 pounds as compared to the 9,060 pounds originally calculated. In other words the weight error was approximately one-half of one per cent.



Front View of the Curtiss "Condor" Army Bomber Equipped With Two Curtiss GV1550 Engines and Six Lewis Machine Guns.

The wings of the Condor are of quite conventional design. There is no stagger or sweepback, the upper wing being flat across the top while the lower wing has a dihedral of three degrees. Both the upper and lower wings have an angle of incidence of one and one half degrees. The airfoil used is the C-72, a development of the Curtis wind tunnel. The wing beams are built of two elliptical tubes with welded interbracing forming a warren truss. The entire wing beam is of welded heat treated chrome-molybdenum steel. The ribs are built up of riveted duralumin. The only non-metal feature of the plane is the wing covering, which is of fabric. The wing is provided with numerous inspection windows, covered with transparent celluloid.

The fuselage is of duralumin tubing except in the highly stressed parts. Fittings are of steel tubing or of sheet steel fastened into the tubing with hollow steel tubular rivets. A warren truss system is used, eliminating wire bracing.

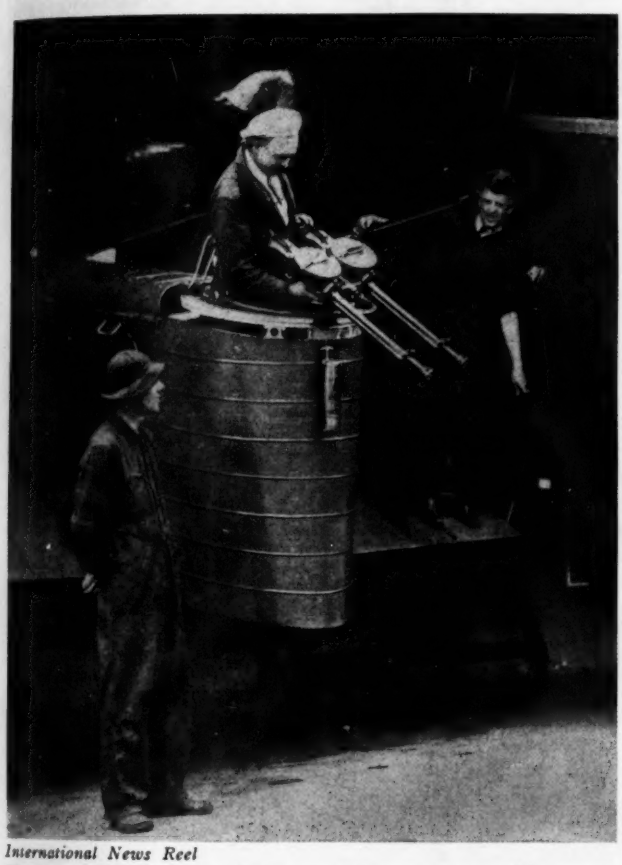
The two Curtiss GV1550 engines develop 600 h.p. at 2,400 r.p.m. engine speed, or 1,200 r.p.m. propeller speed. Due to this low speed and high power, two Curtiss-Reed propellers of fourteen-foot diameter, weighing 220 pounds each are used. These are the largest Curtiss-Reed propellers ever built. On the ground, the pitch may be varied as in other metal propellers.

Stability Not Affected by Bomb Load

Behind each engine, in the nacelle, is a fuel tank of 190 gallons. This arrangement

is very ingenious, as it places the fuel, along with the bombs, directly in line with the center of gravity. In this way the longitudinal stability of the plane is not affected by a difference in the fuel or bomb load carried. In addition to these two tanks, there is a gravity tank in the upper wing directly above the fuselage. As both engines are fed from this one tank, a dual fuel system was worked out enabling either main fuel tank to be used. By means of dump valves all tanks can be emptied in forty seconds. The fuel gauge on the gravity tank is outside, while those on the main tank are on the instrument board, a hydrostatic system being used. Above each engine is a radiator, neatly cowled to minimize the resistance. There are shutters in front of the radiator which, when closed, give the radiator a stream-line form.

The huge fifty-four inch landing wheels, carrying a load of four tons each, are provided with hydraulic wheel brakes, developed by Curtiss engineers in coöperation with the Lockheed organization. The brakes may be applied independently, aiding the maneuverability on the ground. The shock absorbing unit, on both wheels and tail skid, is a combination oleo and rubber type. The shock absorber on the wheels, of which there are two of each, and on the tail, have a travel of sixteen inches, providing extremely smooth riding on the ground.



International News Reel
VIEW OF NACELLE WITH MACHINE GUNS ON SCARFF MOUNTING.

The controls are all of simple design. As there are no exposed wires, the plane has exceptionally clean lines. The aileron control is in the lower wing with a strut connecting the upper and lower ailerons. The tail surfaces are controlled from the tail of the fuselage. As both the horizontal and vertical surfaces are double, a strut connects the movable surfaces. The movement of the rudder strut is actuated by a lever in the fuselage, where the strut passes over the fuselage. As the lower elevator spar passes through the fuselage, the horn is inside the fuselage, the upper elevator being actuated by a connecting strut. The entire tail unit is adjustable, giving the same effect as an adjustable stabilizer. A "Rudder compensator" automatically holds the rudders in an offset position when flying on one motor, relieving the pilot of the strain of flying under such conditions.

The plane has a guaranteed high speed of 116 m.p.h. and a landing speed of 56 m.p.h. The cruising speed will be somewhere between 92 and 105 m.p.h., while the climb will be 860 feet per minute at sea level with a ceiling of 14,000 feet. It is estimated that the plane will have a cruising radius of approximately 800 miles.

At present the plane is at Mitchel Field, New York, from where it will be flown to Wright Field, Dayton, Ohio, to be put through a series of tests by the Army.

The dimensions and weights are:

Length over all	47 ft. 5½ in.
Height overall	16 ft. 6 in.
Span	90 ft.

Chord	9 ft.
Gap (at fuselage)	13 ft. 6 in.
Area of wings (incl. ailerons)	1498 sq. ft.
Weight empty	9020 lb.
Useful load	7280 lb.
Total weight	16,300 lb.
without bombs	13,800 lb.
Wing loading	10.9 lb./sq. ft.
Power loading	13.6 lb./sq. ft.

Navigation Lights

Pioneer Instrument Company *Bulletin*, No. 170 D.—The Air Commerce Regulations require the use of Navigation Lights, as follows:

(A) Angular limits.—The angular limits laid down in these rules will be determined as when the aircraft is in a normal flying position.

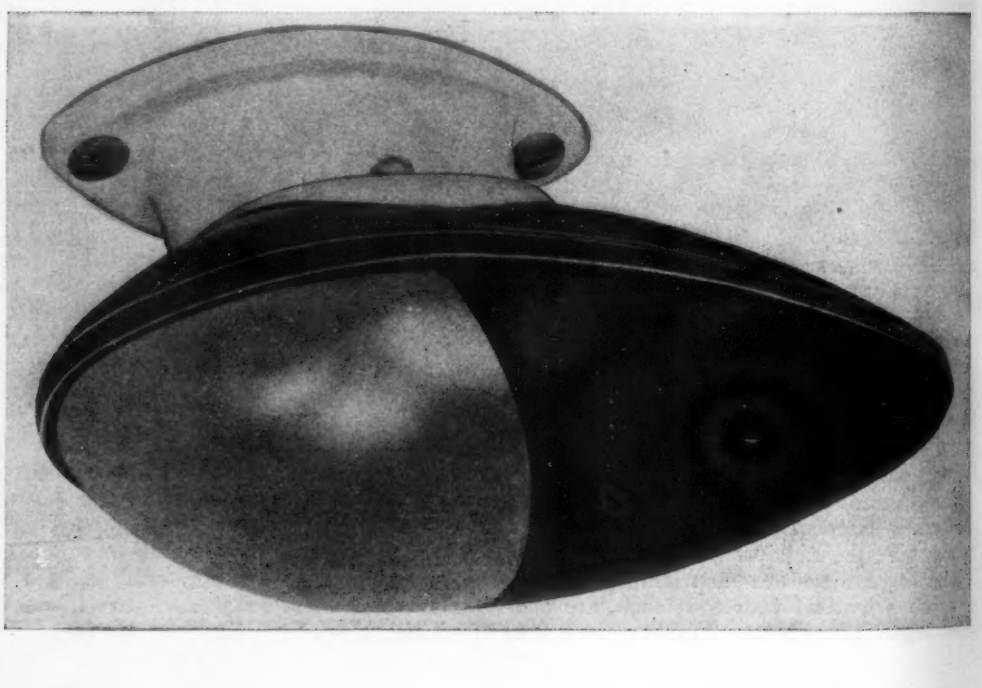
(B) Airplane lights.—Between one-half hour after sunset and one-half hour before sunrise, airplanes in flight must show the following lights:

1. On right side a green light and on left side a red light, showing unbroken light between two vertical planes whose dihedral angle is 110° when measured to the right and left, respectively, from dead ahead and to be visible at least two miles.

2. At the rear and as far aft as possible a white light shining rearward, visible in a dihedral angle of 140° bisected by a vertical plane through the line of flight and visible at least three miles.

The Pioneer Navigation Light, of which a full size illustration appears below, fulfills these requirements. Side lights are designed for mounting on vertical surfaces and tail lights for mounting on a horizontal surface. When so mounted the shielding permits the lights to be seen only through the specified angles.

These lights are very substantially made, and are easy to install. The base is of cast aluminum alloy. The shell of red, green, or clear celluloid, according to the position in which the light is to be mounted, is readily removable for replacement of bulbs. These lamps use standard automobile headlight bulbs, twelve-volt, twenty-one-candle power, double contact.



MISCELLANEOUS

Safety of Life at Sea and Lifesaving

By

REAR ADMIRAL A. P. NIBLACK,
U. S. Navy (Retired) Director.

International Hydrographic Bureau Publication, January, 1927.—Safety of life at sea depends upon good navigation and upon good types and designs of ships rather than upon lifesaving apparatus, or, in other words, the prevention of disaster is more important than remedial measures, but, even with every known precaution, sinkings, collisions and strandings do and will occur.

This publication deals with "Safety first" as the real issue.

The advance of science has placed in the hands of seamen new and improved instruments as aids to navigation. New designs of ships and lifesaving apparatus have contributed much to increased safety of life and the saving of life at sea. Increased intelligence and efficiency in the personnel, as well as improved services in notices to mariners and in warnings of all kinds have lessened risks of navigation, but great sources of danger to shipping yet remain, which international agreements can, and should eradicate, because, under the guise of aiding seamen, they create additional risks to navigation. These sources of danger are the almost entire lack of international uniformity in visual, coastal, port, storm warning and life saving signals, as well as in buoyage and buoy and coastal lighting.

This Bureau has, as one of its objects, to coördinate the hydrographic work of the Hydrographic Offices of its States Members "with a view to rendering navigation easier and safer in all the seas of the world." The recognized functions of the Hydrographic Office of a country are to chart its coasts and harbors and to publish all possible information as to aids to their safe navigation. Certain of these publications are variously called Coast Pilots, Handbooks, Sailing Directions, etc., and contain data as to location and characteristics of lighthouses, light-ships, buoys, beacons, range marks and sound signals, and lifesaving stations, as well as the position of coastal and port signal stations, with the character and meaning of the signals they display. Through notices to mariners, both daily by radio and periodically by published bulletins, all information as to changes in the location, appearance or character of these aids is promptly given to seamen, with the addition of warnings as to the existence of ice, derelicts and other dangers to navigation. It has thus resulted that mariners, the world over, look to the various Hydrographic Offices to keep them informed of all existing aids to navigation, and any changes therein, as well as regards known dangers which may arise.

The Hydrographic Offices themselves have come to look to this Bureau to assemble accurate data because some of the information which is contained in the Sailing Directions is not up to date, through the failure of the various organizations which control them to inform the Hydrographic Offices when new systems are put into effect or changes are made in existing ones. As these organizations exist solely, or in most cases largely, for the benefit of mariners, it results that they do not do their duty in the matter, which thereby incidentally increases the employment of pilots through the uncertainty of ship captains as to the accuracy of information contained in Sailing Directions, as well as to the appalling lack of uniformity in coastal signals and in the port signals of the various ports even of the same country. This puts an additional and unnecessary burden on shipping, already handicapped by charges for port services they do not receive. Many of the port dues which shipping have to pay are for increased port facilities for handling, receiving and despatching cargoes, besides the costs of harbor engineering, port conservancy, and the provision by port authorities of buoyage and port signals, but there are many port services neglected in the various ports.

In the interests of shipping the maritime governments of the world should seek to reduce the charges which are exacted from shipping, for consular visas, for practically useless bills of health and for port dues, and bring strong pressure to bear upon their port authorities to increase their port services, at the same time bringing about international uniformity in aids to navigation. This work is being undertaken by the Organization for Communications and Transit of the League of Nations, which looks to this Bureau to advise it as to accurate data in hydrographic and maritime matters. Article 17 of the Statutes of this Bureau says: "The Bureau shall give a considered opinion on all questions dealing with its work which are referred to it by Conferences or by Scientific Institutions." The activities of the Bureau in this respect, and the publication of all data regarding the visual aids to safe navigation which are so generously provided at great costs on the coasts and in the inland waters, approaches and harbors of the maritime countries of the world, was thoroughly discussed at the Second International Conference, at Monaco, in October-November, 1926, and approved by all the delegations except two.

In the course of the study of the Sailing Directions of all the coasts and ports of the world, the writer has succeeded in tab-

ulating and having printed what has seemed to be practically all of the existing data as to coastal and port signals of the world considered as aids to navigation. Their publication has served the double purpose of inviting the attention of the Governments of the world to the danger to mariners resulting from the lamentable lack of uniformity in signals and aids to navigation, as well as to developing the fact that the published data are not entirely accurate through the failure of other organizations to get the necessary information into the Sailing Directions by informing the Hydrographic Offices of their own or other countries. At any rate, for instance, the tabulations of the buoyage and buoy lighting systems, and also of the storm warning signals of the world show that there are about twenty-six different systems of each, and these have stirred the League of Nations and the International Meteorological Committee to action. As to coastal and port signals, the only semblance of uniformity is where all Governments have adopted certain proposals for uniformity made at International Conferences already held, and the publications of the Bureau on this subject will be the basis of future conferences. It will be well, therefore, to examine the work of previous conferences with a view to outlining what may possibly be accomplished at other conferences which may be held.

This Publication should be in the hands of every ship Captain, whether naval or commercial, responsible for Safety of Life at Sea.

CURRENT BOOKS

The Revolt of Asia: the author believes he sees the end of the white man's world dominance. Upton Close.

The Poilus: an epic history of the World War. Joseph Delteil.

The Monroe Doctrine, 1823-26: an attempt to give "a better understanding of the events in Europe which accompanied the American pronouncement." Dexter Perkins.

Race and History: an ethnological introduction to history. Eugene Pittard.

America Comes of Age: a European's view of modern America. Andre Siegfried.

Social Forces in American History: an economic interpretation of the origin and growth of the American Nation. A. M. Simons.

Eight Bells: Sailor's Snug Harbor yarns and ballads. Frank Waters.

The New Democracy, 2 vol.: presidential messages, addresses and other papers, 1913-17. Woodrow Wilson.

China and the Nations: the author is the chairman of the governing committee of the people's government of China. Ching-Wai Wong.

Nelson's Legacy: Lady Hamilton, her story and tragedy. Frank Danby.

Oil Imperialism: the international struggle for petroleum. Louis Fischer.

Life in a Man-of-War: scenes in "Old Ironsides" during her cruise in the Pacific. Illustrated. "Foretopman."

CURRENT ARTICLES

"The Philippines, an American Ireland." Moorfield Storey, *Foreign Affairs,* July, 1927.

"Has the United States a Chinese Policy?" Stanley K. Hornbeck, *Foreign Affairs,* July, 1927.

"Mr. Churchill as a Military Historian." Sir Frederick Maurice, *Foreign Affairs,* July, 1927.

"Hungary's Access to the Sea." Hamilton Fish Armstrong, *Foreign Affairs,* July, 1927.

"Some Recent Books on International Relations." William L. Langer, *Foreign Affairs,* July, 1927.

"The Truth about Jutland—at Last." William L. Langer, *Fighting Forces,* July, 1927.

"The Sea Is England's Natural Aërodome," Pt. II. Major Douglas Hogg, *Fighting Forces,* July, 1927.

"Events Leading to the Assumption of Military Control in 'Iraq by the Royal Air Force." Algernon John Insall, *Fighting Forces,* July, 1927.

"Intercommunication and the Increasing Mobility of Armies." Lieut. F. K. Wilson, *Fighting Forces,* July, 1927.

"The Perils of Flying the Night Air Mail": the story of the heroic school that trained Lindbergh. Howard Minges, *World's Work,* August, 1927.

INTERNATIONAL NOTES

FROM JULY 1 TO AUGUST 1

PREPARED BY PROFESSOR ALLAN WESTCOTT, U. S. NAVAL ACADEMY

GENEVA NAVAL CONFERENCE

FAILURE THREATENED.—The breakdown of the Three-Power Naval Conference at Geneva, which appeared likely in the early part of July, was postponed at least by the recall of the British delegation on July 19 for consultation with the British Cabinet. After a week in London, the British delegation returned to Geneva with only slight modifications in their proposals hitherto made. These were unsatisfactory to the American delegates, and, at the time of going to press (August 1), it seemed inevitable that after the plenary conference on that date the conference would end without tangible results. President Coolidge made a statement on July 29, declaring that the British proposals called for a larger navy than the United States wished to build, and that this, more than collateral issues about ship tonnage and gun caliber, was the basis of disagreement. Following is the text of the British proposals made on July 29:

1. The combined tonnages of cruisers, destroyers and submarines below the age limit for replacement is not to exceed:

(*a*) For the British Empire and United States, 590,000 tons.

(*b*) For Japan, 385,000 tons.

2. In addition each power may retain twenty-five per cent of the total tonnages given in Paragraph 1, (*a*) and (*b*), in vessels over age.

3. Age limits before which replacement cannot take place:

Ten thousand-ton cruisers, eighteen years.
Other cruisers, sixteen years.
Destroyers, sixteen years.
Submarines, thirteen years.

4. The following vessels over 6,000-tons to be retained in their respective fleets:

British Empire—Four *Hawkins* class, carrying 7.5-inch guns; the *York*, carrying 8-inch guns; two *Emerald* class, carrying 6-inch guns.

United States of America—Ten *Omaha* class, carrying 6-inch guns.

Japan—Four *Ilka* class, carrying 6-inch guns.

Note—The general intention of this proposal is to provide for the retention of existing ships which, though still in full efficiency, fall neither within the 10,000-ton, 8-inch gun class, or the contemplated class with a maximum displacement of 6,000 tons and maximum armament of 6-inch guns.

The British delegation, recognizing that this proposal would leave the United States of America with no 8-inch gun cruisers in this class, are prepared to agree to construction by the United States of vessels which, in the opinion of the naval advisers of the three delegations, would equalize the strength of the British Empire and the United States of America in this class.

5. All other cruisers to be divided into two classes:

Class A, 10,000-ton cruisers.

Class B, smaller cruisers of a maximum displacement of 6,000 tons and mounting a gun not exceeding six inches in caliber.

6. Ten thousand-ton cruisers to be limited in number:

For the British Empire and the United States, twelve.

For Japan, eight.

7. Maximum standard displacement for flotilla leaders to be 1,850 tons and for destroyers, 1,500 tons. Flotilla leaders and destroyers not to carry a gun above five inches.

8. Of the total tonnage in the destroyer class, one hundred per cent may be used for vessels of 1,500 tons and under, but not more than sixteen per cent of the total may be used for the flotilla leader class, i.e., vessels above 1,500 tons and limited to a maximum of 1,850 tons.

9. Submarines to be divided into two classes:

Class A, 1,800 down to 1,000 tons.

Class B, maximum 600 tons.

Submarines not to carry a gun in excess of five inches.

10. The maximum tonnage to be devoted to submarines of either class of whatever age to be as follows:

(*a*) British Empire and United States, 90,000 tons.

(*b*) Japan, 60,000 tons.

Of which total tonnage not more than two-thirds may be used for Class A submarines.

11. Except for the restrictions imposed in Paragraphs 6, 8 and 10, the total tonnage allocated to be used as each power thinks best.

These proposals were objectionable to the American delegates on three main grounds: (1) that they restricted the liberty of the United States and Japan to build heavier cruisers with 8-inch guns; (2) that they departed from the idea of limitation by categories of types; (3) that under the British scheme 6-inch gun cruisers would be imposed on the other two powers.

DIFFICULTY OVER CRUISERS.—The chief difficulties of the conference arose over: (*a*) The British desire to restrict the number of large cruisers (of from 8,000 to 10,000 tons) below the figure deemed necessary for the special requirements of the American Navy; (*b*) the British proposal to reduce the ordnance of cruisers from 8-inch to 6-inch guns, such as could be carried in the larger ships of their merchant marine, and (*c*) the British demand for a very large number of 6,000-ton cruisers, according to Lord Jellicoe as many as seventy, for the protection of their commerce.

The United States delegates, while willing to restrict the total tonnage of cruisers to any figure acceptable to the other two powers, desired freedom to use this tonnage for cruisers of any size up to 10,000 tons, and armament up to 8-inch guns. At the plenary session on July 14 their divergent views were again presented, after which the week following was spent chiefly in conferences between the British and Japanese delegates. No results of consequence came from these conferences, save a tentative proposal to consider as a basis for discussion a total cruiser and destroyer tonnage for Great Britain and the United States of 500,000 and 325,000 for Japan, with the privilege of retaining, in addition to this tonnage, from 100,000 to 125,000 tons of obsolete vessels for the two major powers, with a proportionate number for Japan.

BRITISH AND AMERICAN AIMS.—The divergent aims of the British and American delegations were thus stated in *Time* of July 18:

British Delegation's Concepts. (1) Britain to retain actual naval supremacy, while seeming to grant the United States equality with herself in a shrewdly worded treaty; (2) The Coolidge Administration expected by the British to accept this treaty, so drawn as to make good political capital in the United States by giving the impression that a Coolidge victory had been won at Geneva; (3) The essence of this subterfuge to be twofold: (*a*) That the United States and Britain should each be allowed to build 600,000 tons of cruisers (that is to say, a great many more than a pacific, pinch-penny United States Congress would ever authorize); and (*b*) That all cruisers should be of 7,500 tons (which would suffice Great Britain because she has naval bases for these small boats throughout the world, while the United States has not); (4) The justification of such a treaty to be that Britain has far-flung interests and trade routes requiring defense, whereas the United States is self-supporting.

United States Delegation's Concepts. (1) That the United States would accept nothing less than parity, at not more than 400,000 cruiser tons (200,000 less than the British asked); (2) That the British proposal to limit cruisers to 7,500 tons could not be tolerated, chiefly because it would make more than forty fast British steamers potential cruisers, and also because of the United States' lack of naval bases; (3) That the British had stated their position in such bald terms that the Coolidge Administration would not find such a treaty as the British proposed valuable political capital, but rather the reverse.

UNITED STATES AND LATIN AMERICA

MARINES ATTACKED IN NICARAGUA.—Early on Sunday morning, July 17, a force of about forty United States marines, under Captain Hatfield, supported by a somewhat larger number of marine-trained native constabulary, repulsed a force of 400 or more rebels under the Liberal General Sandino. The conflict took place at Ocotel, 110 miles from Managua. The attack was finally headed off by five bombing planes under Major R. E. Rowell, which swept low over the rebel forces, raking them with machine gun fire at close range. It was estimated that there were about 300 killed among the rebels, 200 of them by the planes. One marine was killed and one wounded. General Sandino was practically the only leader of any consequence who refused to surrender arms when General Moncada yielded last spring.

ENGLAND AND BRITISH COMMONWEALTHS

HOUSE OF LORDS REFORM DROPPED.—As anticipated in the last issue of the PROCEEDINGS, the Baldwin Ministry dropped its plan for reorganizing the House of Lords in such a way as to increase its strength and insure Conservative control. Opposi-

tion to the plan, even within the Conservative party, led Premier Baldwin, early in July, to announce in Parliament that he would not proceed with the bill until after conference and agreement with all political parties, which practically meant the abandonment of the bill, at least for the present session. One of the chief objections to the proposed measure was its provision for setting the total membership of the House of Lords at a fixed figure, which would have prevented the King from creating new peers and thus have done away with a time-honored weapon for forcing through measures to which the Lords were opposed.

IRISH VICE-PRESIDENT ASSASSINATED.—Kevin O'Higgins, Vice-President of the Irish Free State Council and Minister of Justice and Foreign Affairs, was assassinated near Dublin on July 10, while walking to midday mass. Three men sprang from an automobile, fired seven bullets into him, and escaped. Vice-President O'Higgins died several hours later. He had been one of the strong men of the Free State, a chief lieutenant of President Cosgrave, and an uncompromising supporter of the Anglo-Irish Treaty. He represented Ireland at the last British Imperial Conference, and had recently returned from the League Council session at Geneva. Nine men were arrested the next day on charges of conspiracy, and the stolen automobile was found, but there were no direct clues to the murderers.

UNITED STATES ENVOY TO IRELAND.—The first United States Minister to Ireland, and the first foreign envoy to the Irish Free State, Mr. Frederick Sterling, was greeted in Dublin on July 26. Mr. Sterling's appointment marked a step in the working out of the plan adopted at the Imperial Conference last December for giving the free states of the British Association of Commonwealths a larger share in the conduct of foreign affairs.

RUSSIA AND EASTERN EUROPE

SOVIET LEADERS QUELL OPPOSITION.—The return of Josef Stalin to Moscow on July 22, after his extended stay in the Caucasus, apparently put an end to the hopes of Trotsky, Zinorief, and other opposition leaders to avoid expulsion from the Communist Party Central Committee, or even to secure free discussion of the points at issue between the two communist factions prior to the grand party congress scheduled for mid-November. The attitude of Stalin, as indicated by administration spokesmen, followed that of Lenin in flat opposition to free discussion as a mere waste of time and hindrance to party unity. It was pointed out, also, that adoption of the opposition policy of a more aggressive communism within Russia would intensify foreign hostility and lead inevitably to war.

DEATH OF KING FERDINAND OF RUMANIA.—Ferdinand I, first king of greater Rumania, died on July 20 at his palace at Sinai in the Carpathians. His death was due to long standing cancer complicated by pneumonia. Prince Mihai, five-year-old son of Prince Carol and grandson of Ferdinand, was proclaimed king on the same day, under the supervision of three regents, his uncle Prince Nicholas, the Patriarch Miron Christia, and the chief judge of the Rumanian Supreme Court. This was in accordance with the decree of January 4, 1926, which set aside Prince Carol's claims to the throne, and provided for a regency upon Ferdinand's death. The regents appointed are mere figureheads under the control of Jon Bratiano, who returned to the premiership late in June and has long dominated Rumanian politics.

Prince Carol, from his villa at Neuilly, near Paris, declared on July 21 that he would assert his rights to the throne and contest Bratiano's control of the country. He desisted, however, from taking any steps until after his father's funeral. In Rumania there was no general opposition to the succession of Mihai.

VIOLENT RIOTS IN VIENNA.—Dangerous rioting broke out in Vienna on the morning of July 15, ending only at nightfall, after the burning of the Palace of Justice, the destruction of court records, the death of ninety or more persons and injuries to upward of 700. On the date of the outbreak, Socialist leaders in Vienna had organized a general strike and demonstration in protest against the acquittal the night before of three men of the Nationalist "Front Fighters' Organization," accused of killing a man and a child in a clash with Socialists in Burgenland last February. Communists took advantage of the demonstration, and,

by joining the mob and firing on the police, started the conflict.

The country districts remained strongly loyal to the government of Chancellor Seipel. Troops were moved into the city by water, nationalist organizations mobilized outside the city, and, as a result of the bloodshed, moderate Socialists within the city rallied in support of the government. The outcome was a decided victory for the Seipel Ministry. After some delay, the general strike was called off at midnight of Monday, July 18. Socialist defense organizations were allowed to take part in restoring order. In spite of its sudden collapse, the uprising was significant in its violence, exceeding in this respect even those of 1848.

FAR EAST

MODERATE TREND AT HANKOW.—During the latter part of July the more moderate elements in the Nationalist Government at Hankow continued to gain strength. Anti-Russian feeling increased, and it was reported that Borodin would soon leave Moscow "for good." Evidence of the split between radicals and moderates and of the increased ascendancy of the latter was seen in the statement issued July 14 by the widow of Sun Yat Sen, condemning the present tendencies at Hankow and revealing a breach with her brother, T. V. Soong, who has in general been opposed to violent measures. About the same time came a curious pronunciamento from the Comintern, or Executive Committee on Chinese Affairs, at Moscow, which denounced the Hankow Government as cowardly, counter-revolutionary, and "compromising with bourgeois elements," and called upon Chinese communists to break with Hankow and adopt more intensive methods.

During July the Shantung front remained quiet. There were reports of bargaining between Chang Kai-shek and the Shantung generals, and also of dissension among the leaders at Nanking. Writing in the August number of *Asia*, Mr. Vincent Sheehan pointed out that from the first, the Russian advisers had opposed Chiang's attacks on Shanghai and Shantung for fear that the rich financial opportunities laid open would slacken the ardor of the advance on Peking. This seems to have been the outcome. It was reported on July 27 that Americans at Shanghai would protest to Washington against the greatly increased Chinese taxes and levies on trade.

OUR POLICY TOWARD CHINA.—Following an extended visit to China and investigation of conditions there, Senator Hiram Bingham of Connecticut in July made the following statement embodying his views of the situation in China and the policy to be adopted by the United States and other foreign powers.

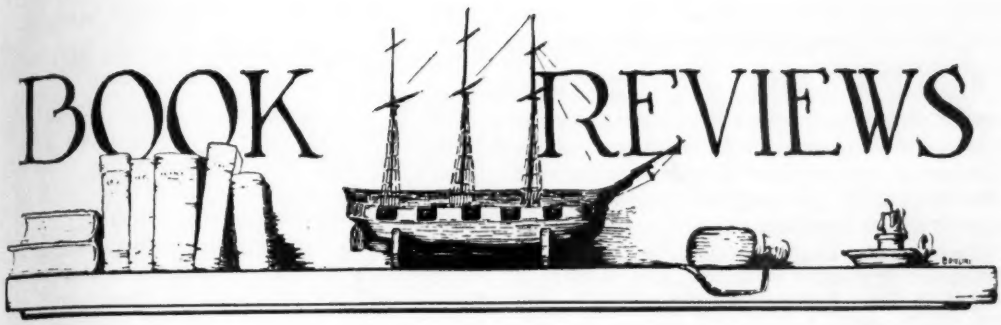
I am convinced that the Chinese revolution is a fact and armed intervention is utterly impossible as a means of solving either the powers' problems or China's. China's mind has been definitely convinced that its ills are due to the foreigners and it will be impossible to eradicate them as long as the present treaty position exists.

We must recognize that the old days are past and no force can restore them, hence, the sooner we admit this the better for the United States.....

We should send commissioners to all of China's governments as soon as possible to open negotiations for new treaties, making them on the best terms we can, for the longer we wait the poorer the terms are likely to be.

I cannot attempt to foretell China's future, but certain facts are evident at this time: (1) The revolution's deep-rooted permanent effects are changing the political and social characteristics of the people; (2) There will probably be several governments in China for a long time, as size and complexities impede rapid unification; (3) It is of no advantage for foreigners to attempt to impede the revolution or to interfere with the normal development of any one of the various governments by not recognizing it or recognizing only its opponents; (4) Nanking, possessing the wealthy background of Shanghai, seems momentarily the most stable of the independent governments. It actually controls more territory and engenders greater confidence among the substantial elements of the Chinese people; (5) The Chinese are unable to control mobs and the rougher elements; hence protection on our part is still necessary and probably will continue to be necessary.

This does not mean that I favor armed intervention, which I am thoroughly convinced is most impractical, but I believe that we must leave our warships and marines in China for a long time.



BOOK DEPARTMENT

Save money by placing your orders for all books, whether professional or not, with the Institute Book Department, which will supply any obtainable naval, professional or scientific book, and not only save you money but will save the purchaser a great deal of inconvenience by having one source of supply. Address Secretary-Treasurer, U. S. Naval Institute, Annapolis, Maryland.

THE BROTHERHOOD OF THE SEA.

By E. Keble Chatterton, Longmans, Green and Co., 55 Fifth Avenue, New York. Price $3.50.

That the *Brotherhood of the Sea* is a "special fraternity" and "limited neither by nationality nor century," no seaman can deny! However, the brotherhood as set forth in this book is essentially British except for the last chapter. Here the reader is treated to a very remarkable account of the rescue of a yachtsman in the Bay of Biscay by the S.S. *Stad Dordrecht* of Rotterdam as well as to a very interesting account of the rescue of the crew of the *Antinoe* by the *President Roosevelt*.

The beauty and romance of the brotherhood of the sea lies in its broad international character and it therefore seems a pity that these stories were not devoted to this greater fraternity. With such a title it would appear that the book had missed a splendid opportunity to do full justice to such a romantic subject.

To those who have read accounts of Jutland, Zeebrugge and the Dover Patrol, there will be very little that is new in seven of the ten chapters that the book contains. However, to one who has not read previously of these exploits, the incidents incorporated in this volume should prove of absorbing interest, for like Keble Chatterton's other books, it is well written and the subject is undeniably interesting to those who like a dash of salt in their reading.

A.S.W.

AN AIDE-DE-CAMP OF LEE. THE PAPERS OF COLONEL CHARLES MARSHALL.

Edited by Major General Sir Frederick Maurice. Little, Brown and Company, Boston, Mass. Price $4.00.

Colonel Charles Marshall was military secretary and aide-de-camp of General Robert E. Lee throughout the Civil War. In this capacity, Colonel Marshall drafted General Lee's dispatches and reports and had first-hand knowledge of Lee's military policy as well as the causes for the success or failure of the various engagements of the Civil War.

At the conclusion of the war, Colonel Marshall set about elaborating the notes and dispatches he had kept. These papers may be grouped under three general heads: those intended for a life of Lee; those intended for an account of the Gettysburg campaign; and those consisting of notes of events of the war, some of which were used for lectures and addresses.

Had it not been for the publication in 1925 of Major General Maurice's book *Robert E. Lee, the Soldier*, these papers of Colonel Marshall might have continued to lie dormant. Due to the excellence of *Robert E. Lee, the Soldier*, a son of Colonel Marshall was so struck by its merits that he wrote Major General Maurice complimenting him on his book, and, at the same time, offering to send the author his father's papers. Naturally such a rare opportunity was not neglected. Realizing the great his-

torical value of these papers, Major General Maurice undertook to edit them at the request of the son.

The labor of editing these papers consumed two years. The new material contained in them and the light they shed on obscure points of the Civil War is best summed up by quoting the following passage from the preface:

> The first two chapters give the most complete and candid description of the reactions of political exigencies in the Confederacy upon military plans and actions which I have ever read. The third gives an excellent exposition of Lee's military policy. The fourth and fifth throw new light upon the facts and causes of Jackson's delays in the "Seven Days." The sixth makes it clear that Lee never planned to fight the second Manassas, but that that battle was brought on by Stonewall Jackson. The seventh throws grave doubt upon the stories—generally accepted—that Lee was informed by a friendly citizen of Frederick that McClellan had found the famous lost order of South Mountain. The eighth should settle definitely the question whether Lee or Jackson devised the flank march round Hooker at Chancellorsville. The Gettysburg chapters contain much the fullest account yet published of the fateful orders issued to Stuart. The last chapter of all is the only account from a Southern witness of the historic scene in McLean's house at Appomattox.

The subject matter of these papers is too interesting to need comment. Colonel Marshall writes easily, clearly and with no trace of bias or malice. There is a copious sprinkling of footnotes by General Maurice throughout the book that add materially to the clarity and interest of the whole. In the case of the Gettysburg campaign, the principal additions made by Colonel Marshall to the published dispatches are marked by black lines. Eight charts and nineteen illustrations further contribute to this very excellent work.

To those who have read and enjoyed *Robert E. Lee, the Soldier*, this new publication should prove an exceedingly interesting companion book. Certainly for students of the Civil War, it will be a source of new and valuable information.

British Army officers have always displayed great interest in the study of the lives of Confederate Army leaders.

In this thorough and well arranged edition of these papers it is realized that only the more important historical events were included. However, it is to be hoped that Colonel Marshall's papers have not been exhausted completely and that enough data remains for a possible book of reminiscences.

A.S.W.

Great Circle Sailing

(See page 2645, December, 1926, and page 245, February, 1927, PROCEEDINGS)

By L. M. Berkeley. The reviewer of *Great Circle Sailing* in the December number of the PROCEEDINGS seems not to have perceived the central idea of the book in question. This idea is the immense cost of navigating a modern steamship (which is shown to be for the largest vessels $86 per mile), and the consequent importance of attaining the utmost limit of economy by shortening the journey. The reviewer says that "the trend of development" is "toward simplification of the methods." It is submitted that the trend of development is toward the economy of time and money; and simplification of methods, while very desirable, must in comparison take a back seat. Monster steamships, costing $86 per mile to navigate, will not be intrusted to navigators who prefer methods which are simple to those which are economical.

The reviewer thinks that the book in question "takes a step backward" by relying too much on the signs of the trigonometric functions, which he finds "confusing" even to navigators who have had a thorough mathematical education. An amusing story is told about a dispute between Professor Einstein and a street car conductor in Berlin over the proper amount of change for a car fare. At the close of the argument, in which the famous savant had the worst of it, the conductor remarked severely: "I see that you are very weak in arithmetic." So, possibly, there may be navigators who have had a thorough mathematical education, and yet are "very weak" in the algebraic signs of the tangent, cosine, etc. If so, the obvious remedy would be to glance at the table on page 47 of the book in question. This table (which the reviewer evidently overlooked) gives the algebraic signs of all the trigonometric functions, and, if the navigator is "weak" on these signs, a reference to this table will "strengthen" him.

It is, of course, desirable that methods of navigation should be simple; but it is more desirable that they should be accurate and brief. The great advantage of using the algebraic signs is that they furnish a method which is absolutely general. The method is really that of coördinate geometry. There is no need to stop and draw

a diagram. There are no particular cases to be kept in mind, no exceptions to be remembered; it makes no difference whether the vessel is north or south of the equator; it makes no difference whether the destination is in north or south latitude; it makes no difference whether longitude is reckoned east or west (as, for instance, 200 degrees east or 160 degrees west); it makes no difference in what quadrant the angle of the course falls. In all cases the computer puts in the data with the proper signs, starts the machinery, and grinds out the result in about three minutes.

This use of signs enables three-place logarithms to be employed, and makes the calculation extremely brief. The latest textbook of the Naval Academy (1926) gives a specimen worked example using 170 figures. The method of *Great Circle Sailing* solves the same example with thirty-four figures, i.e., one-fifth as many. It is believed that this method takes less time than any other, not excepting the graphic.

The reviewer prefers the use of the haversine in calculations. But the haversine also is ambiguous, for Hav A = Hav (360°−A); and in the neighborhood of 0° and 180°, the haversine varies so slowly as to be out of the question for three-place logarithms. The employment of the haversine would more than double the length of the calculations, and would only partially remove the difficulty arising from the algebraic signs.

If the navigator finds the mystery of these signs too much for him, he can dodge them by reckoning the course from the nearest elevated pole.

The reviewer speaks well of the azimuth table method of finding the great circle course. This method calls for seven interpolations of the most tedious kind, some plus and some minus. An example of this method in the textbook just mentioned uses 122 figures. The same example worked by the method of *Great Circle Sailing* uses forty-one figures. Yet the reviewer says that the former method is "far more valuable" than the latter.

The reviewer is of the opinion that "the only modern and thoroughly practical method of great circle sailing is the graphic method." On this point the book under discussion says: "The objection to all such methods (i.e., graphic methods) is that the measurements are dependent upon scales marked on paper, and the paper shrinks irregularly, and is variously affected by humidity, dryness, heat, and cold, so that the measurements are unreliable. Moreover, the minuteness of the distances on the paper makes them difficult to measure, even with the expenditure of much care and time in plotting; and conditions on shipboard are often unfavorable for plotting. Where special charts are available, they are apt to be large and unwieldy, and soon become confusing from the multiplicity of pencil lines, and of holes made by the points of the dividers."

These objections are clearly pointed out by Mr. G. W. Littlehales, *Development of Great Circle Sailing*, page 41, as well as in Mr. G. R. Putnam's *Nautical Charts*. Of this the reviewer says never a word. He merely expresses the dogmatic opinion that "the only modern and thoroughly practical method of great circle sailing is the graphic method."

One of the objections pointed out above is illustrated by reference to the Hydrographic Office "Great Circle Sailing Chart for the North Atlantic." On this chart the width of a pencil line represents a distance of about four nautical miles. This is ten minutes' steaming for the *Leviathan*, costing about $350. Hence in plotting on this chart, an error amounting to the width of a pencil line may conceivably entail a cost of $350.

On this same chart, the circle which gives the course, represents a degree by a distance equal to .03 of an inch. Who can divide this distance into tenths? Yet in the U. S. Navy, the standard of accuracy for the angle of the course is tenths of a degree.

It is beside the mark to say that because the gyro-compass may have an error of two or three degrees, therefore any correction to the calculated course of less than that amount is negligible. It is one thing to calculate the course with accuracy; it is another and a different thing to steer the course after it has been calculated. If the calculated course has an error of two or three degrees, and if the steersman is liable to an error of like amount, then the total error may be from four to six degrees. Fallibility in the task of steering is no excuse for slovenliness in the task of calculating. These appliances are not limited to the gyro-compass. They include also the azimuth charts, the azimuth tables, and the useful North Star azimuth table in the *Nautical Almanac*. Let it never

be forgotten that every seventy feet gained means a dollar saved.

The reviewer favors laying out a great circle path at the outset of the voyage, and adhering to this track all the way to the end. He says: "Any desired course from one point to another may be laid down on a gnomonic chart. . . . . The track may then be transferred by points of latitude and longitude to a Mercator chart or plotting sheet. . . . . After these points have been laid down on the Mercator chart, a straight edge laid through them will indicate immediately how frequently and to what extent the course must be changed in order to keep on the great circle track."

There could not be a more wasteful procedure than the one just outlined. It aims to keep the vessel in the limits of a predetermined path, when, in point of fact, the ship is constantly and inevitably deviating from it, and constantly requiring to be brought back. To attempt to get back on this circle is a pure waste of time and money; and the money wasted is one dollar for each seventy feet.

In *Great Circle Sailing* a simple method is given for correcting the course from time to time, pending the determination of a new fix. This uses only a little over twenty figures and requires less than two minutes. The reviewer sees no merit in it. He prefers first to lay out the course on the great circle chart, then to transfer it laboriously to the Mercator chart, and finally to guess at the small angle of one or two degrees formed by two short lines in the plot. Meanwhile the vessel has deviated from the prescribed track, and yet is being steered as if it were on that track. Why follow this loose method of approximating the point at which the course is to be changed, when two minutes' calculation will give it exactly?

THE ESSENTIALS OF TRANSFORMER PRACTICE, THEORY, DESIGN AND OPERATION.

By Emerson G. Reed, 2nd Edition (revised and enlarged), D. Van Nostrand Company, Inc., New York, 1927. $5.00.

The title of this book is somewhat misleading in that the subject matter is primarily a treatment of the principles of the transformer as an electromagnetic device with but very little reference to what could be considered engineering practice. The title is, however, well chosen insofar as the use of the word "essentials" applies.

The introductory chapter on the "Evolution of the Transformer" derives from a historical background the principle of electromagnetic induction, the reaction upon which all transformers are operated, and upon which their design is based.

This chapter merges so nicely into the next that it is very difficult to distinguish the dividing line. These two chapters, dealing with the general subject and theory, are followed by several chapters, each dealing with one of the various factors which affect transformer design and operation. The chapter on copper loss is representative and includes a brief discussion on the calculation of eddy current losses in transformer windings.

Several chapters follow on specific types of transformers and transformer problems, especially the problems attached to instrument transformers. In this chapter frequent use of vector diagrams and curves diminishes the amount of involved mathematics required and thereby renders the text simpler and better adapted to the average student. Power and distributing transformers are omitted except as covered in the general treatment of the subject of transformers. The constant current transformer and several other types are not mentioned being probably considered too special for discussion in a general text. The subject of "Reactors" is considered of importance and is assigned a separate chapter. Several chapters are devoted to various types of transformer connections and their advantages. Under these chapters the problem of transformer polarity and its effect on the various systems of transformer connections is discussed at considerable detail.

The remaining seven chapters deal with the operating problems of transformers, the last three being assigned the specific factor of costs.

As outlined above the text is a logical and thorough treatment of the fundamentals underlying transformer theory, design, and operation.

D.G.H.

American Samoa

How the United States Came Into Possession of Part of the Samoan or Navigators' Islands, with a Short Account of the Entire Group Including Swain's Island

By CAPTAIN EDWIN T. POLLOCK, *U. S. Navy, (Retired)*
Former Governor of American Samoa

EARLY NATIVE HISTORY

"SA" (sacred) "MOA" (center)—"The Center of the Universe" say the Samoans, "was the birthplace of the human race." Practically certain it is that the Maoris of New Zealand, the Hawaiians, the Tahitians, the Marquesans, and even the Eastern Islanders, originated in Samoa and migrated from there or were driven by storms while making a *malaga* (visit), for several entire families go on *malagas* at the same time. Ethnologists find, however, traces of migrations of Aryan tribes which indicate that a first migration took place to the eastward some 2,000 years ago. It is easy to believe that the Polynesian bronze coloring and traits are such as would result in Caucasians whose descendants had lived as have the Polynesians for that long a time in the islands where they now are. That they can display much mentality and vigor in a cooler climate is shown by the Maoris who sprang from the remnants of three large canoe loads of Samoans who were making a voyage of discovery. The English can testify to this, "but that is another story" of long and bloody wars. (See map, page 870, August PROCEEDINGS.)

Had the chiefs passed down their history as they did their genealogical trees, we would know more than we do.[1] One Maori traces his ancestry back for 3,000 years, allowing twenty-six years to a generation.

A RACE OF FIGHTERS

Native accounts in Samoa go back to the beginning of the Christian Era and there were always leaders striving for power. There were wars not only among the various island chiefs but between the groups of islands: The Fijians against the Samoans, the Tongans against the Samoans. There are remains of forts in Samoa still and also small cannon used in their defense. One of those cannon mounted in front of Government House at Pago Pago is, under the present *status quo*, the sole defense (?) of American Samoa.

ARRIVAL OF FOREIGNERS

Extraneous, though scanty, history began when the islands were discovered by the Dutchman, Roggewein, in 1722. They were later visited by men-of-war—French in 1768 and 1787, and British in 1791. Our own interest began with the visits of whalers and traders shortly afterwards, but our first official visit was in 1838, when Lieutenant Charles Wilkes, U. S. Navy, with his exploring expedition of five vessels, arrived. He wrote an extensive account of the islands.

That same year some of the chiefs made a sort of commercial treaty with the captain of the H.B.M.S. *Conway*, but regular official intercourse began with the establishment of consulates in Apia on Upolu, the most populous island of the group, by the British in 1847, the United States in 1853, and by the Germans in 1861.

Before those times and until 1869 when Malietoa Laupepa was crowned "King" at Apia, and his uncle Malietoa Talavou was crowned by another faction and set up at Mulinuu, there were tribal wars which interfered with the peace of the islands and with trade. The strife in Upolu extended to

[1] None had any written language until after the arrival of missionaries. They arrived in Samoa in 1830 and a tract was printed in 1834.

Savaii and to Tutuila but Manu'a, which claims to be *the* "Sacred Center," generally held aloof. Thereafter things began to happen fast and furious. There must have been something in the atmosphere which caused the natives and the whites to act as they did for the next thirty-one years.

STRUGGLES FOR POWER

There were kaleidoscopic changes in the Government and there were two, and sometimes three, tribes fighting for their chief to be recognized as "King." The three consuls worked in shifting pairs against the third and for their own governments, or rather against the third, hoisting one flag or another, only to have their acts repudiated by their home governments. There were traders working for themselves and against their consuls. The king of Hawaii sent a Mission, of whose acts the less said the better, to advance Hawaii's claim to "the supremacy of the Pacific."[2] There were captains of men-of-war making treaties or supporting one "king" or another and sometimes taking part in the warfare, only to get into more trouble at home. Governments and provisional governments followed one another and there were kings, consuls and chief justices taking refuge on board men-of-war or being shot at on shore; kings were deported and then brought back; and, on the other side of the world, three great powers with imperfect vision were disinclined to take any definite action which would end the deplorable conditions in the "Center of the Universe."

HURRICANE HALTS STRIFE

It might make a thrilling scenario for a movie of a new kind of *Pinafore* only that there was too much blood shed and never a happy ending until, after a disastrous hurricane which narrowly averted a war between the great powers, and after ten years more of turmoil and chaotic conditions, all to the detriment of peace and commerce, the three powers came to a definite agreement. Then, in 1900, Samoa ceased to be an "Independent Kingdom," kings were abolished, Germany annexed Upolu and Savaii,[3] and the United States "acquired" Tutuila and Manu'a.

[2] See PROCEEDINGS, September, 1926, page 1709.

[3] As one result of the World War, German Samoa went under the New Zealand mandate and is now known as Western Samoa, although the postage stamps of the latter show "Samoa."

TREATIES WITH THE UNITED STATES

In 1872, Commodore Richard W. Meade in the U.S.S. *Narragansett,* visited Pago Pago, Tutuila, the only real harbor in Samoa and the best one in the South Seas, and made, on his own responsibility, a treaty with the chief, Mauga (one of that name is still district governor there), whereby the United States was granted the exclusive privilege of establishing a naval station in Pago Pago Harbor. This was not acted on by Congress as it seemed to imply our protection, which was against our then foreign policy. In 1878 however, after the chief Mamea had visited the United States, Samoa made her first treaty and the United States got into a very "entangling alliance." The treaty provided that

> Naval vessels of the United States shall have the privilege of entering and using the port of Pago Pago and establishing therein and on the shores thereof a station for coal and other naval supplies for their naval and commercial marine, and the Samoan Government will thereafter neither exercise *nor authorize any jurisdiction within said port adverse to such rights of the United States nor restrictive thereof.*

The italics are the author's and will be referred to further on.

The treaty also provided that should any difference arise between Samoa and another government at peace with the United States, "the goverment of the latter will employ its good offices for the purpose of adjusting those differences upon a satisfactory and solid foundation."

TREATIES WITH GERMANY AND ENGLAND

The next January, Samoa made a similar treaty with Germany in regard to the port of Saluafata, Upolu, but with more exclusive privileges, which were strongly denounced as being against Samoan interests. In the August following, a treaty between Samoa and Great Britain gave the latter the right to "establish a naval station and coaling depot" on the shores of a Samoan harbor to be designated but excepting Saluafata and "that part of Pago Pago" which might be "selected by the Government of the United States as a station." Thus did Great Britain try to have a claim in Tutuila, which was not consistent with our rights as given above.

AMERICAN ASCENDANCY

Going back to when Americans were in the ascendancy for a while, our Government

sent Colonel A. B. Steinberger as a special agent in 1873 to investigate and report. His report said that the then government consisted of two groups of chiefs. With the aid of the consuls and the missionaries, a constitution and code of laws were drawn up, probably the first written ones. The missionaries there seemed not to be taking advantage of the natives as they did in Hawaii. In January, 1875, two kings were elected. Steinberger had returned to the United States but returned on the U.S.S. *Tuscarora* in April bringing a letter and presents from the President. His official connection with our government then ceased. With two kings trouble began to brew. Steinberger became premier with a new constitution and one king, Malietoa Laupepa, again in power, to rule for four years when the other tribe was to have their "king" in power.[4]

Steinberger gave the Samoans the best government they had ever had but it lasted only about a year. He lost the support of some powerful chiefs and the citizens of other nationalities were jealous and feared the predominating influence of the United States in the government of Samoa. As a result of a conspiracy between the American consul and the captain of H.B.M.S. *Barracouta*, Steinberger was illegally arrested February 8, 1876, was taken aboard that ship and deported. The captain of the *Barracouta* had to resign after an investigation of his conduct, and the king, Malietoa, who had ordered the arrest, was deposed, while his government fell to pieces.

ANNEXATION DISCUSSED

A rebellion ensued and after three years Malietoa Talavou again became king until his death a year later. During this period many things happened. Annexation was discussed in Washington but without results. British sailors were killed in battle with the Samoans at Mulinuu. The Samoans sent to Fiji asking for British protection but without results and the day after the mission returned, May 23, 1877, the American Commercial Agent, with the approval of the German consul, hoisted the American flag over the Samoan capital to forestall a supposed British annexation and it was hoisted again on February 22, 1878, for the same reason when a British high commissioner was trying to force a treaty on the Samoans. Both times the flag raising was repudiated by our government. While mentioning "flag raisings" it may be said that the German consul, Dr. Stuebel, on January 23, 1885, hoisted the German flag at Mulinuu, the seat of government, as "a public manifestation" of taking possession "as security of all the land which now constitutes the municipality of Apia"; he claimed to be conserving the rights of Germany. His act was likewise repudiated by his government, as was the later act of the American consul by *his* government in hoisting the American flag in May, 1886. This last flag raising was to forestall a supposed German annexation, and met with a great protest from the German consul. The consuls as well as the "kings" seem to have had a merry time.

MORE STRIFE IN 1881

In 1881 a short time after Malietoa Talavou died, Malietoa Laupepa was made king for the third time and trouble broke out anew, with Tamasese claiming the kingship for two years when he was to be succeeded by Mataafa. Our Navy, represented by Captain J. H. Gillis, got both factions to sign an agreement on board the U.S.S. *Lackawanna*, whereby Malietoa continued. Peace of a sort, with Tamasese as vice-king, lasted four years. In those piping times of peace the restlessness in Samoa extended to New Zealand, whose government urged the annexation of Samoa by Great Britain to the latter's diplomatic embarrassment.[5] To the New Zealand petition and to a request from Malietoa for annexation no attention was paid. This was in 1883, and the next year Malietoa applied twice to Great Britain and once to the United States, all without result.[6]

GERMAN ACTIVITIES

In 1885, Tamasese rebelled and was supported by the German officials and traders.

It was during Tamasese's ascendancy that our consul announced a protectorate over Samoa and hoisted our flag as previously related only to have his acts repudiated. Tamasese lasted about two years, during the sec-

[4] The Malietoas have ruled their tribe under that name for 600 years, and still are prominent.

[5] As far back as 1871 a group of chiefs had visited New Zealand and had urged annexation, but without result.

[6] After New Zealand had the mandate over Western Samoa (1920), some of the chiefs applied to Great Britain for annexation, and some wanted the United States to include them with American Samoa. World war unrest!

ond of which, Mataafa (Malietoa's supporter) was also crowned king and supported by the British and Americans in the continuing war.

It was also during this period that the three powers tried to have a joint settlement. A joint commission was sent to Samoa in 1886, and in 1887 at a conference at Washington the German minister proposed the appointment of a foreign adviser to the king—the adviser to be from the country having the (then) predominating interests in Samoa. Our Secretary of State objected to this as it would result in a German protectorate if not a possession. Nothing resulted. It was then that Germany declared war against "Malietoa personally," Tamasese was declared king, and Malietoa was deported. The next year the opposition crowned Mataafa king at Faleula, as "Malietoa Mataafa," September 9, 1888.

Feeling ran high in the United States and Congress in February, 1889, appropriated $500,000 for the protection of our interests. This followed the report of the activities of the Germans as sent by Lieutenant Hawley from New Zealand, where he had been sent by our commander in Samoan waters.

The German commander who had declared foreigners under martial law was directed by his Government to withdraw his declaration.

ADMIRAL KIMBERLY ARRIVES

Admiral Kimberly in command of our Pacific Station was ordered with the U.S.S. *Trenton,* flagship, to Apia, and upon arrival found at anchor the U.S.S. *Vandalia,* and the U.S.S. *Nipsic,* H.B.M.S. *Calliope,* and the German ships *Adler, Eber,* and *Olga.* On March 16, 1889, a terrific hurricane wrecked all but the *Calliope,* British man-of-war, and probably prevented war between the three great powers.

THE POWERS AGREE

Prince Bismarck proposed a resumption of the conference and as a result Malietoa Mataafa was recognized as king in June, 1889. All Samoa except Manu'a accepted the convention of the three powers. Malietoa Laupepa was brought back and as *head of his tribe* became "king" for the fourth time and Tamasese declared his loyalty to him.[7]

[7] Tamasese died in 1891. In 1894 his son was in rebellion for a short time but does not figure extensively thereafter except that in 1898, he with the American Consul, the chief justice, and another Malietoa (Tanu), had to take refuge in a British man-of-war.

MATAAFA DEPORTED

Mataafa, who had retained much of the power, however, set himself up in 1891 as king, and for two years there was trouble and fighting until by the joint action of the British and German men-of-war commanders, Mataafa was taken and deported until 1898.

STRIFE CONTINUES

In the meantime this second tripartite government had not been a success. Many of the officials appointed were incompetent or at loggerheads with each other, there was fighting between the various factions in Upolu and Tutuila, and the Samoans as well as commerce were suffering. The Germans were active while the British and Americans were more or less passive and the three great powers seemed not to know the remedy.

MORE TROUBLE IN 1898

In April 1898, the three consuls informed all Samoans that Malietoa Laupepa was the only king in Samoa and that no other would be recognized. The consuls recommended to their respective governments that Mataafa, who was the foremost fighting chief in all Samoa, be allowed to return if he would sign an agreement promising allegiance to Malietoa, as such action would keep the other chiefs quiet. Mataafa did so, and arrived in September. Malietoa soon died and Mataafa promptly forgot his promise to "be good" when the matter of a new king came up. In Samoan custom "majority rule" does not apply and while the new Malietoa (Tanu)—the natural successor—and Mataafa and Tamasese (for a very brief time) all claimed the throne, they could not come to an agreement. The Berlin convention had provided that in such an event the chief justice should decide the matter and his decision was to be final. Tamasese withdrew and the other two prepared for war. After some months the chief justice announced his decision, although before it was made, the German consul had stated that he would not abide by it unless it was for Mataafa, who had given the Germans so much trouble before, but whose cause they now espoused. Consequently, when the chief justice announced on December 31, 1898,

that Malietoa Tanu was to be king, a riot followed the next day. Mataafa, supported by the Germans, took possession of Apia, and the chief justice, the American consul general, Malietoa and Tamasese took refuge in H.B.M.S. *Porpoise*. On January 4, 1899, in order to avoid further bloodshed, the three consuls referred to Mataafa and his chiefs as the provisional government and to the municipal president Raffel, a German, as its executive head, and asked their home governments for instructions. Raffel ordered the supreme court closed, and he and the German consul protested when the British captain of the *Porpoise* announced that the chief justice, supported by the American consul general and the British consul, would hold court, and that the *Porpoise* would open fire if necessary to support the rights of those two great powers. The court was duly held in the courthouse over the protests of the Germans.

THE BEGINNING OF THE END

Rear Admiral Kautz arrived in the U.S.S. *Philadelphia* on March 6, 1899, with instructions to act in concert with the majority of the three consular representatives. He called a conference a week later with them and the naval representative. The German Consul General, F. Rose, declared that he would recognize only the (his) provisional government. Admiral Kautz issued a general proclamation of the conference decisions: "The provisional government has no legal status under the Berlin treaty; Mataafa and his men are to go home and obey the laws of Samoa and to respect the Berlin treaty." The German Consul General issued a proclamation of denial, stating that he would uphold the provisional government until he heard from his home government. In the severe fighting which followed due to the activities of the Germans and H. J. Moors, an American trader, men of all parties were killed, including officers and men of the British and American navies, whose landing parties were operating ashore together. Blood was again thicker than water.

In April, 1899, the three powers sent a commission to settle things.[8]

[8] The King of Norway and Sweden, as arbitrator of all claims for damages due to unwarranted action between January 1, 1899, and the arrival of the commission, placed the liability on Great Britain and the United States. It took many years to adjust and pay the claims.

The commission arrived May 13. It got the hostile armies to turn in their arms; it upheld the chief justice and decided that there should be no king. The three consuls were to have the executive power, and, with the chief justice continuing in office, were to be the provisional government. Dr. Solf was installed as municipal president. Peace was restored, and the commission made its report in July.

THE DIVISION OF THE ISLANDS

In September, 1899, Great Britain and Germany were convinced that even this tripartite government would not do. A partition of the islands was proposed: the United States to "retain Tutuila" while the two other powers divided the rest. The United States agreed to accept the islands east of 171° west longitude. By a treaty between Germany and Great Britain, the latter left Germany in Samoa in exchange for interests elsewhere. In the tripartite treaty Germany and Great Britain renounced in favor of the United States all rights and claims (which they never had but wanted) over what is now American Samoa, while the United States renounced in favor of Germany all rights and claims (which they never had nor wanted) over the islands to the westward of 171° west longitude.

GERMAN SAMOA

On March 2, 1900, Dr. Solf, a very capable man who afterwards figured prominently in Germany, hoisted the German flag at Mulinuu, declared the islands to be German territory, and became the first governor of German (now Western) Samoa.

Commander B. F. Tilley, U.S.S. *Abarenda*, participated in the act, firing a national salute, and our troubles in those islands were over, except for minor commercial affairs which are still unsettled. The latter arose after the World War with Western Samoa under the New Zealand mandate. The treaty of 1900 provided for the same commercial rights as before, but under the New Zealanders with a preferential tariff for British goods some of those rights vanished. The Governor of American Samoa, in 1923, called the attention of the State Department to the fact in a statement that our coastwise shipping laws, which applied to American Samoa, were also inconsistent

with the treaty of 1900. These inconsistencies are still unadjusted.

AMERICAN SAMOA UNDER OUR FLAG

Our treaty of 1878 provided that we could establish a naval station in Pago Pago Harbor, but it was not until 1889 that Congress appropriated the money for it, $100,000. The next year a survey was made under the supervision of Admiral Kimberly and land was purchased. Construction of a wharf and buildings did not begin, however, until 1899, when Commander Tilley arrived in the *Abarenda* with materials, moorings, etc. He recommended certain things which resulted in the President issuing, February 19, 1900, three days after the tripartite treaty was ratified, an Executive Order as follows:

> The island of Tutuila, of the Samoan group, and all other islands of the group east of longitude 171° west of Greenwich, are hereby placed under the control of the Department of the Navy for a naval station.
>
> The Secretary of the Navy shall take such steps as are necessary to establish the authority of the United States and to give to the islands the necessary protection.

The Secretary of the Navy did so the same day and placed the islands under the commandant of the naval station.[9]

Commander Tilley, who was the first commandant, decided to hoist the flag on April 17, 1900, and invited the chiefs of Manu'a to attend, but they or their "king" Tuimanu'a, were inclined to consider their islands still "independent." That same day the chiefs of Tutuila made a formal cession of *all* the islands east of 171°, although they had no authority over Manu'a. The chiefs of the latter were shortly convinced that they had better acquiesce in the hoisting of the flag over their group, and this was done on June 5, 1900,[10] but they did not make a formal cession of the group until July 16, 1904.

Those cessions were never acted on by Congress but were accepted by the President who sent suitable gifts and medals with his acceptance. If the tripartite treaty sufficed for other nations, our physical occupation should suffice for all other purposes, but the non-acceptance by Congress has afforded grounds for a few misguided persons, white as well as Samoan, to stir up trouble. Still, American Samoa and its native inhabitants have a peculiar status, different from our other island possessions. They are "not citizens of the United States nor has the Constitution been extended to them, although they owe allegiance to the flag." Acts of Congress recognize them as American territory and when Swain's Island was, in 1925, proclaimed by Congress to be under American sovereignty, Congress also placed that island "under the jurisdiction of the Governor of American Samoa."

"AMERICAN SAMOA FOR THE SAMOANS"

The above caption has been the policy of the Island Government although the authority of the Governor is supreme. The natives have their same political divisions as they had hundreds of years ago together with their hereditary county chiefs, one of whom is selected by the Governor as district governor in each of the three districts. They have their local officials and district judges, etc. Although all officials must be approved by the Governor and hold office during his pleasure, he has seldom removed any and only for cause. They have a *Fono* or assembly, yearly, which recommends laws, etc., which may, or may not, be approved by the Governor. The latter may enact laws himself, which he does after consultation with the chiefs.

A "Codification of Regulations and Orders for the Government of the Islands" was started by the first commandant, and is added to as necessary. It is printed in Samoan and in English, and provides primarily, that "The customs of the Samoans, not in conflict with the laws of the United States concerning American Samoa, shall be preserved, unless otherwise requested by the representatives of the people."

No (American) Samoan can sell his land to an outsider, but he can lease it, with the approval of the Governor, for a period not exceeding forty years.

Nearly all the naval officers at the naval station do work for the Island Government without compensation except the satisfaction of knowing they have helped our wards.

With their sick given free medical treatment by navy doctors and with better sanitation, the native population has increased

[9] The commandant was not commissioned as "Governor" until 1905.

[10] April 17 is celebrated in Tutuila, and June 5 at Manu'a, as Flag Raising Day with all the ceremonies that attend our Fourth of July and all the chiefs of American Samoa attend the ceremonies on the three days.

over fifty per cent since 1900. In the "flu" epidemic of 1918 not a single case occurred in American Samoa, although nearby islands lost thousands.

With their interests looked out for, our paternal care has promoted health, wealth, prosperity and happiness. The natives of American Samoa may well call their *Kovana Sili* (Big Governor), "Father," and the United States Government the "Great Father Beyond the Great Ocean."

SWAIN'S ISLAND—THE NEWEST POSSESSION OF THE UNITED STATES, AND THE ONLY ONE ACQUIRED AS A RESULT OF THE WORLD WAR

KNOWN BY OTHER NAMES

For nearly seventy-five years a little island owned by an American, then by his son, and then by his two grandchildren, was without any other government than that of the "Head of the Family." It is now known by the name given it by Lieutenant Charles Wilkes,[11] U.S. Navy, and is sometimes called Quiros Island after its discoverer in 1606. It is also sometimes referred to as Gente Hermosa Island (Island of Beautiful People)—the name Quiros gave it. Again it has been called Jennings' Island after its owners since 1856. It is known to the Samoans as Olosega (not to be confused with the island of the same name in the Manu'a group). It was many, many years before it had the right to fly the flag and to claim the protection of any nation.

SPURNED BY TWO NATIONS

The first American owner, Eli Jennings, obtained it from an Englishman in 1856. Jennings married a Samoan wife and in time passed on and his son, Eli H. Jennings, succeeded him. At one time the British Commissioner of some of the near-by islands (400 miles is "near-by") sent an official to the island to collect taxes, with word to the effect that all islands belonged to Great Britain. The taxes were paid under protest but in time the British Government directed their return with the statement that the island belonged to the United States. This was apparently news to some people in those same United States, to whose Government Jennings paid income tax as a dutiful American citizen should do, for he had made good incomes from the production of copra. He had applied, at least as far back as 1913, to the United States Government for protection, and to be placed under the government of American Samoa, but without result. The Navy Department did not want the responsibility of the island, and the State Department would not initiate anything unless the Navy Department would ask for it and say the island would be of use to the Navy, which it was not.

[11] The U.S.S. *Peacock* (one of Wilkes' ships), W. L. Hudson, commanding, visited the island and suggested the name, as a Captain Swain had reported its existence to him.

ASKS AMERICAN PROTECTION

Eli H. Jennings, the son, who also married a Samoan, died in 1920, but left a daughter and a son. The daughter married a British subject, had children, and died before 1922, when I first arrived in American Samoa as Governor. In 1922 the son, Alexander Jennings, and the following year the son-in-law, in behalf of his children, applied to have our flag hoisted over the island, stating various reasons.

On the representation of the American Consul at Apia, Western Samoa, and of myself, and after considering the changed status of the islands in the Pacific due to the World War, the Navy Department changed its views, and as a result the State Department requested Congress to pass the Joint Resolution which resulted in "Old Glory" floating over Swain's Island.

The reasons given by the American Consul and by myself had to do with legal problems involved in the estate, and particularly with the advocacy of the principle that an American citizen, whether white or brown, whether living within or without the United States, should have the protection of the flag of his country.

AMERICAN SOVEREIGNTY

An Act of Congress, approved March 4, 1925, stated that it was included in the list of guano islands appertaining to the United States and which were bonded under Act of Congress of August 18, 1856;[12] that it had been in the possession of American citizens for over fifty years, etc., and, therefore,

> *Resolved* . . . . that the sovereignty of the United States over American Samoa is hereby extended over Swain's Island, which is made part of American Samoa, and placed under the juris-

[12] United States Statutes at Large for 1855-1859 does not contain the list.

diction of the administrative and judicial authorities of the government established therein by the United States.

In May, 1925, the Governor of American Samoa sent the U.S.S. *Ontario* the 200 miles to the north'ard, with Lieutenant Commander C. D. Edgar, United States Navy, to represent him, the governments of American Samoa and of the United States, to hoist the Stars and Stripes, and to proclaim the sovereignty of the United States over the island.

HOISTING THE FLAG

At 3:00 P.M., May 13, 1925, the ceremonies began. Lieutenant Commander Edgar read his orders and the Joint Resolution of Congress and duly proclaimed the sovereignty of the United States. The American flag was hoisted, a national salute of twenty-one guns was fired by the U.S.S. *Ontario,* and another part of the world came under our flag with all that that implies. A Samoan *Faifaio* (pastor) led the assemblage in singing a Samoan hymn and then made an address, telling in appropriate words how the seventy-odd people of the island had at last "acquired a father and a mother in the Great American Government."

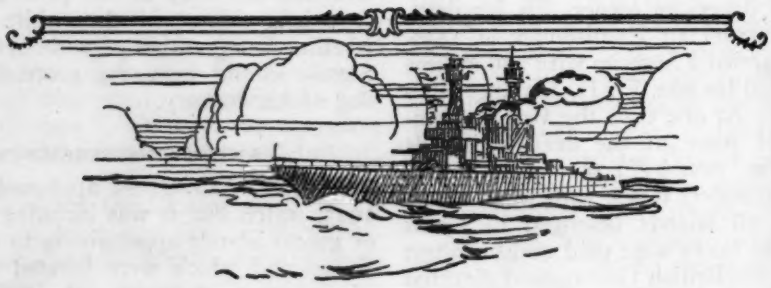
On each May 13 since then, the Governor of American Samoa has sent his stationship to the island to help celebrate their Flag Raising Day with all the ceremonies that attend the corresponding days in American Samoa—at Tutuila on April 17, and at Manu'a on June 5.

A MAN *with* A COUNTRY

It may seem trifling to some to make so much fuss over a coral atoll with only one square mile of dry land surrounding a lagoon and encircled by a coral reef, where little is grown except coconuts and English seldom spoken, but in hoisting our flag a patriotic obligation was fulfilled whereby the American owner of the island, Jennings, ceased to be "A man without a country."

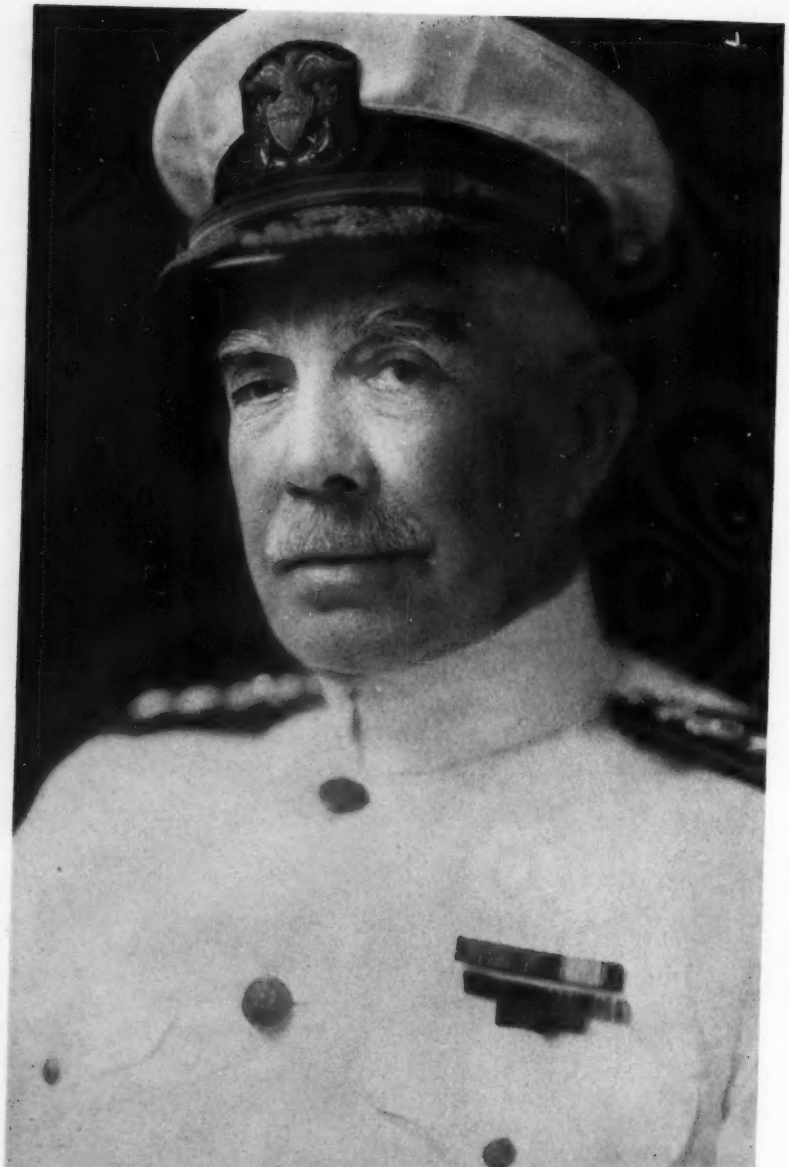
AMERICA ACQUIRES ONE SQUARE MILE

So while the World War had one result in bringing the United State a little more territory—the only territory it got for helping win that war—patriotic sentiments were also a factor in the hoisting of the Stars and Stripes on a tiny island the other side of the world from home.



Courtesy of Underwood & Underwood

THE HONORABLE HUGH S. GIBSON, FORMER MINISTER TO SWITZERLAND, NOW AMBASSADOR TO BELGIUM, HEAD OF THE AMERICAN DELEGATION TO THE LIMITATION OF NAVAL ARMAMENT CONFERENCE RECENTLY HELD AT GENEVA



Courtesy of Underwood & Underwood

REAR ADMIRAL HILARY P. JONES, U. S. NAVY, APPOINTED BY PRESIDENT COOLIDGE AS ONE OF THE AMERICAN DELEGATES TO THE GENEVA CONFERENCE

SECRETARY'S NOTES

1,000,000 Passenger Miles Flown in the Air at the Naval Academy in Three Years Without Mishap

With the completion of this year's summer course in aviation at the Naval Academy last month the records show, since the course was established by the Navy Department a little over two years ago, that nearly 1,000 young officers have completed the ground school course and have flown with their instructors over 1,000,000 passenger miles, or a distance equal to forty times around the world. And this too without a single mishap to personnel or injury to material. The aircraft employed were the war designed seaplanes of the *F-5-L* and *H-16* types with Liberty engines, reconditioned each year by the Aircraft Factory at Philadelphia, and operated by a *VS* squadron from the Aircraft Squadrons, Scouting Fleet.

Wooden Ships and Iron Men vs. Iron Ships and Wooden Men. Lieutenant Champion

With the passing of the ships of wood and sail, the old timers of the Navy gave expression to their feelings that the youngsters who were succeeding them were not up to snuff, by remarking that while in the old days the ships were made of wood and the officers of iron now the ships were iron but the officers made of wood.

This was never said with bitterness, however, as the older officers realize better than others that this is another way of saying that the Navy has been going to the dogs ever since the time of John Paul Jones! As far back as 1855 the Commandant of Midshipmen on the summer practice cruise reported that the midshipmen of those days did not seem to realize what the government was doing for them and that they did not make the most of their opportunities!

These remarks have been occasioned by the thrilling account of Lieutenant Champion's recent attempt to wrest the world's altitude record, and the successful landing of his plane from a height where his altimeter registered 47,000 feet at which point his engine began to disintegrate and fly apart.

Surely the youngsters of today have some redeeming features.

Responsibility for Troubles at the Geneva Conference

As this is written there are a few American editorial writers and many British press correspondents who are attempting to pass the blame for failure at Geneva on to our technical naval experts abroad and to our Navy Department. We have pointed out several times in these pages the true relations existing between the responsibilities of the statesman and the so-called naval experts.

It is not possible in our form of government for naval officers to usurp in any way the political prerogatives of the statesman—the former can offer expert technical advice

when requested or when by law required to give it, but the latter has the sole responsibility for formulating policy. In the end, Congress (the American people), decides through its power of controlling purse strings.

The American writers, referred to above, profess to believe that it is but natural that admirals think of nothing else but to increase naval armaments, that in some way the latter hope to "bull it through" and get away with it. How foolish a viewpoint if one but stop and ponder!

In the first place, there is nothing inherently different in the naval officer's education and study of politics and history that would lead him to make deductions more foolish than his fellow countrymen.

In the second place, there is no class of citizens in the country today, who have made a more thorough study of policy and history than the high ranking officers of the Navy or who better understand the limitations existing between the civil and military functions of our government. It can be said in all honesty, that no naval officer coming within the above category would, for a minute, advocate turning over the control of policy or purse strings to the Navy.

There is not a high ranking officer in the Navy today who has not sat at the feet, figuratively speaking, of our own great Mahan and learned this lesson well. As Mahan was acknowledged the world over by the civilian, the statesman, and the professional man of arms, as the greatest student of naval history, and particularly honored by the British nation, it may be interesting to see what has been the source of inspiration of our naval thought today.

Mahan, over thirty years ago, writing on the subject of "Preparedness for Naval War," in his book, *Interest of America in Sea Power,* said:

> The problem of preparation for war in modern times is both extensive and complicated. As in the construction of the individual ship, where the attempt to reconcile conflicting requirements has resulted, according to a common expression, in a compromise, the most dubious of all military solutions—giving something to all, and all to none—so preparation for war involves many conditions, often contradictory one to another, at times almost irreconcilable. To satisfy all of these passes the ingenuity of the National Treasury, powerless to give the whole of what is demanded by the representatives of the different elements, which, in duly ordered proportion, constitute a complete scheme of national military policy, whether for offense or defense. Unable to satisfy all, and, too, often equally unable to say frankly, "This one is chief; to it you others must yield, except so far as you contribute to its greatest efficiency," either the pendulum of the government's will swings from one extreme to the other, or, in the attempt to be fair all round, all alike receive less than they ask, and for their theoretical completeness require. In other words, the contents of a national purse are distributed, instead of being concentrated upon a leading conception, adopted after due deliberation, and maintained with conviction.

If it be granted that the American naval officer has profited in the slightest degree by the teaching of his great preceptor, it must be acknowledged that the former cannot be so ignorant and foolish as to believe he can control the distribution of the national purse.

As for misconceptions by our naval officials as to the subserviency of the military arm to the political and civil interests, those who hold the views that our admirals are "narrow minded" would do well to read further:

> War is simply a political movement, though violent and exceptional in its character. However sudden the occasion from which it arises, it results from antecedent conditions, the general tendency of which should be manifest long before to the statesmen of a nation, and to at least the reflective portion of the people. In such anticipation, such forethought, as in the affairs of common life, lies the best hope of the best solution—peace by timely agreement—while men's heads are cool, and the crisis of fever has not been reached by the inflammatory utterances of an unscrupulous press, to

which agitated public apprehension means increase of circulation. But while the maintenance of peace by sagacious prevision is the laurel of the statesman, which, in failing to achieve except by force, he takes from his own brow and gives to the warrior, it is none the less a necessary part of his official competence to recognize that in public disputes, as in private, there is not uncommonly on both sides an element of right, real or readily believed, which prevents either party from yielding, and that it is better for men to fight than, for the sake of peace, to refuse to support their convictions of justice. . . . . On questions of merely material interest men may yield; on matters of principle they may be honestly in the wrong; but a conviction of right, even though mistaken, if yielded without contention, entails a deterioration of character, except in the presence of force demonstrably irresistible—and sometimes then: "Death before dishonor" is a phrase which at times has been abused infamously, but it none the less contains a vital truth.

To provide a force adequate to maintain the nation's cause, and to insure its readiness for immediate action in case of necessity, are the responsibility of the government of a state, in its legislative and executive functions. Such a force is a necessary outcome of the political conditions which affect, or, as can be foreseen, probably may affect, the international relations of the country. Its existence at all and its size, as should be, the reflection of the national consciousness that in this, that, or the other direction lie clear national interests—for which each generation is responsible to futurity—or national duties, equally clear from the mere fact that the matter lies at the door, like Lazarus at the rich man's gate. The question of when or how action shall be taken which may result in hostilities, is indeed a momentous one, having regard to the dire evils of war; but it is a question of moment, of the last moment, to which can be postponed a final determination of such tremendous consequences.

. . . . . .

Logically, therefore, a nation which proposes to provide itself with a naval or military organization adequate to its needs must begin by considering, not what is the largest army or navy in the world, with a view of rivaling it, but what there is in the political status of the world, including not only the material interests but the temper of nations, which involves a reasonable, even though remote, prospect of difficulties which may prove insoluble except by war. The matter, primarily, is political in character. It is not until this political determination has been reached that the data for even stating the military problem are on hand; for here, as always, the military arm waits upon and is subservient to the political interests and civil power of the state.

One Reason for the Difficulties at Geneva

At the Washington Conference, Secretary Hughes held a big trump card—the potential mastery of the sea in the overwhelming superiority of battleships, actually building—there was no difficulty in arriving at a solution when America offered to scrap these vessels and proposed equality in tonnage in this class. Suppose in the meantime, the United States had started in after the conference to build cruisers and today was in the same relative position with this type of vessel as she was six years ago in battleships. Does anyone believe that the cruiser question would be difficult of solution? Certainly, no one would object to our offer of scrapping our cruisers.

Lloyd George, who really came to know America during his war associations, said on August 1 last, "So far as the building of ships by Americans being a reasonable ground for misapprehension, it is something we can look upon as a means of support if we are attacked by another country. That involves that we must see to it that our quarrel is just." He also said, according to a special cable in the Baltimore *Sun*, "To know what is going on at Geneva the last person I should ask is Bridgeman, because he has not yet begun to comprehend what is going on. It takes Bridgeman's thinking machine a long time to get around to a subject before it clicks." Probably a partisan opinion.

Bywater and the Baltimore "Sun"

Last month we printed in these pages the remarks of the Baltimore *Sun's* naval expert, the British naval writer, Hector C. Bywater, and the *Sun's* editorial agreeing with him that America's original proposals at Geneva were modest and just. At last, thought we, America must be right, but, alas, hardly had our manuscript been composed by the printer than another stand was taken by Bywater and the *Sun* immediately approved, and for some reason now appears to blame the American delegates for failure to recede from a stand it and Bywater previously said was just.

If real economy and real limitation is the object, how can America be blamed for willingness to accept 250,000 cruiser tonnage? We offered to go lower or discuss higher tonnage, up to 400,000 tons.

It is in no sarcastic mood we venture to inquire of the *Sun:* if America is wrong, just what are, in specific terms, the conditions which the United States should accept. In other words, if it was the *Sun's* responsibility at Washington and Geneva, just what would it accept or sacrifice?

Below the Rio Grande Affairs are Normal

"The American consul at Puerto, Mexico, William Edgar Chapman, of Alluwe, Oklahoma, was shot and seriously wounded by two Mexican bandits in his home yesterday, according to a State Department report from the British consul there.

"This Government is making vigorous representations to the Mexican Government for apprehension and punishment of the culprits."—Press despatch from Washington, July 18, 1927.

"Although the annexation of Texas helped to precipitate the conflict (The Mexican War), an atmosphere of ill-feeling had long clouded the relations of the two countries. Since the winning of independence a succession of revolutionary governments had ruled Mexico, with the usual results of political instability at home and of irresponsibility in foreign affairs. The American Department of State labored from 1825 to 1835 before the international boundary, defined in the Spanish Treaty of 1819, was confirmed by Mexico. Even more annoying delays attended the establishment of commercial relations, and, after a satisfactory treaty was finally arranged in 1831, the Mexican authorities obstructed or forbade the execution of many of its provisions. Citizens of the United States engaged in lawful pursuits in Mexico often were imprisoned and treated with the greatest inhumanity. In 1835 twenty-two Americans suspected of being abettors of a revolution were summarily executed without trial. The property losses of American citizens soon came to represent a large sum. . . . ." *A Political and Social History of the United States, 1829-1925,* by Arthur M. Schlesinger.

As a nation, we have our faults, and we may be youthful and inexperienced in the conduct of international affairs, as the British press has recently stressed in criticizing our stand at the Geneva conference, but *impatience* is not one of them.

Pago Pago or Pango Pango?

The name of the village near the naval station, Island of Tutuila, American Samoa, was formerly spelled Pango Pango. Mrs. Churchill in her book *Samoa 'Uma* says that "Criticism as to the spelling of Samoan names will discover a variation from the standard of the missionaries who reduced the language to writing. For their uses the letter 'g' served sufficiently to reproduce our soft 'ng.'" She employed "Pago Pago," which had been adopted

for the chart spelling. Robert Louis Stevenson, in his *A Footnote to History,* says that "In one particular the spelling of Samoan words has been altered; and the characteristic nasal *n* of the language written throughout *ng* instead of *g*. Thus I put Pango-Pango, instead of Pago-Pago; the sound being that of soft *ng* in English, as in *singer,* not as in *finger.*"

The Samoan Disaster

Rear Admiral Kimberly

It will be recalled that on March 15, 1889, Germany and the United States stood upon the brink of war in Apia harbor, with men-of-war decks virtually cleared for action. Feeling was at a high tension and it is said that upon Admiral Kimberly's arrival in port the senior German naval commander waited before making his official call until he was certain the admiral was not on board. Seeing the latter go ashore to return the call of the American consular officer, the German captain deliberately proceeded to the flagship *Trenton* and left his card. These incidents are recited merely to show how, in the twinkling of an eye, the fires of passion and emotion of men as well as nations, may be quenched—just as they may be ignited—without the slightest warning.

There was in the above case, to be sure, some warning of the approaching hurricane, for the seaman had the lowering barometer and the other outward physical signs—just as the statesmen have their warnings of approaching political bad weather. The American ships could have put to sea at the first warnings, and so could have the German as well as the British *Calliope, but,* the reasons they did not were political—and Admiral Kimberly was justified by the Secretary of the Navy as will be seen later.

The American admiral's professional skill and integrity has been referred to by all as of the very highest order, and he is known as one of the finest of American seamen. Robert Louis Stevenson, in describing "the image of this typical sea-officer," refers to Kimberly's reply to Captain Kane, in which the latter acknowledged the former's thanks for assistance rendered by the *Calliope*. "My dear Captain," he wrote, "your kind note received. You went out splendidly and we all felt from our hearts for you, and our cheers came with sincerity and admiration for the able manner in which you handled your ship. We could not have been gladder if it had been one of our ships, for in a time like that I can truly say with old Admiral Josiah Tatnall, 'that blood *is* thicker than water.'"

Mr. Jones—Still Keeping Watch

Commander D. W. Mullan, now nearly eighty-five years old and living in Annapolis, Maryland, the commanding officer of the stranded *Nipsic,* wrote over thirty-eight years ago the following prophetic words in his official report of the disaster: "I beg to call your attention particularly to the valuable services of Ensign H. P. Jones, Jr., who was officer-of-the-deck of the morning watch and who superintended the steering of the ship properly and carefully for two long hours to prevent the *Olga* from cutting us down. He stood bravely at his post by my side on the poop through all the storm, rain, and volumes of smoke, when at times we could see but a few feet ahead, as the blinding smoke and heat were simply terrible. Mr. Jones is a young officer of great promise, and bids fair to be of value to the service and his country."

Of course, Mr. Jones is recognized as the Rear Admiral Hilary P. Jones, President of our Naval Institute, a former commander-in-chief of the United States Fleet, with the rank of admiral, and one of the President's delegates to the Naval Conference at Geneva.

Naval Cadets Lejeune and Wiley

Of officers now on the active list of the Navy and Marine Corps, the commanding officer of the *Vandalia* wrote in his official report: "Naval Cadets J. A. Lejeune and H. A. Wiley, serving in the *Vandalia*, are commended as follows: The gale was terrific and danger extreme, the ship being on the brink of destruction for fifteen hours. These young officers did their duty in the most commendable manner, distinguishing themselves for coolness, zeal, and pluck."

This is the same Lejeune who is now Major General Commandant of the Marine Corps and the same Wiley who this month becomes commander-in-chief of the United States Fleet with the rank of admiral.

Mr. R. H. Jackson, Late Naval Cadet, Now Admiral

On October 28, 1889, the Secretary of the Navy, Benjamin F. Tracy, addressed the following letter to Mr. R. H. Jackson, Late Naval Cadet, U. S. Navy, University of Virginia, Charlottesville, Virginia: "Sir: I take pleasure in furnishing you with a copy of a communication addressed to the Department on the twenty-sixth instant, by Captain N. H. Farquhar, late commanding officer of the U.S.S. *Trenton*, in which he brings to notice an act of gallantry on your part, on the occasion of the wreck of that vessel, which recently came to his knowledge. He reports that when, during the hurricane at Samoa, the crew of the *Trenton* were ordered into the rigging to act as a sail to bring the ship's head to the wind, you led the way, and set a good example to the men.

"The foresight and promptness exhibited by you on the occasion in question belongs to that class of gallant acts and deeds under trying emergencies which reflect honor on the naval profession and lead to good results.

"The Department is pleased to place on its files Captain Farquhar's tribute to your gallantry."

This is the same Jackson who almost immediately rejoined the Navy and is now the commander-in-chief of the Battle Fleet, with the rank of admiral.

Admiral Kimberly's Official Report

At the conclusion of Admiral Kimberly's report of the disaster, he said: "This disaster I classify among the incidents and accidents inseparable from the prosecution of duty. Its magnitude, however, gives it a distinguishing feature which, fortunately, the service is rarely compelled to witness.

"Captain Farquhar has demanded a court of inquiry. No disinterested officers are available here. I therefore respectfully refer the entire matter to the Department, and if further investigation is deemed necessary I should be pleased to have a court of inquiry ordered."

The Aid and Friendliness of the Samoan Natives

In a letter dated April 27, 1889, the Secretary of the Navy wrote a letter to the Secretary of State acknowledging the assistance of the Chief of Apia, Seumanutafa, as follows:

"Sir: In a report dated Apia, Samoa, March 26, 1889, from Rear Admiral L. A. Kimberly, U. S. Navy, commanding the United States naval force on the Pacific station, the Navy Department is informed that invaluable assistance was rendered by certain natives of Samoa to the shipwrecked vessels at Apia, during the storm of Saturday, the sixteenth of March. Rear Admiral Kimberly calls particular at-

tention to Seumanu Tafa, Chief of Apia, who was the first to man a boat and go to aid in directing the natives engaged in taking our people and public property on shore on the seventeenth and eighteenth. Special commendation also is given to the men composing his boat's crew, as follows: Muniaga, Anapu, son of Seumanu; Taupau, Chief of Manono; Mose, Fuapopo, Tete, Pita, Ionia, Apiti, Auvaa, Alo, Tepu.

"The Department has the honor to request that you will express to the authorities at Samoa, through the proper channels, its high sense of the courage and self-devotion of Chief Seumanu and his fellow countrymen, in thus risking their lives to rescue the shipwrecked officers and crew of the *Trenton* from their position of peril and distress; and that you will, at the same time, inform them of its intention to send to the Chief Seumanu, in accordance with the recommendation of Rear Admiral Kimberly, and as a mark of its appreciation, a double-banked whale-boat, with its fittings, and to reward suitably the men composing his crew, for their brave and disinterested services."

Why No Court of Inquiry Was Ordered by the Department

The final chapter was written by the Secretary of the Navy, Benjamin F. Tracy, in a letter to Rear Admiral Kimberly, in reply to the latter's request and that of Captain Farquhar for a court of inquiry:

"In reply to your request and that of Captain Farquhar for a court of inquiry, the Department has to say that it deems such a court unnecessary. It is satisfied that the officers in command of the ships at Apia did their duty with courage, fidelity, and sound judgment, and that they were zealously and loyally seconded by their subordinates; that the hurricane which caused the destruction of the vessels and the loss of so many lives was one of those visitations of Providence in the presence of which human efforts are of little avail; that the measures actually taken by yourself and the officers under you were all that wisdom and prudence could dictate, and that it was due to these measures that so large a proportion of the crews were saved; that the one step which might have averted the catastrophe, namely, to have put to sea before the storm had developed, could only have been justified, in view of the grave responsibilities resting upon you at Samoa, by the certainty of overwhelming danger to your fleet, which could not then be foreseen; that you rightly decided to remain at your post, and that the Department, even in the face of the terrible disaster which it involved, approves absolutely your decision, which has set an example to the Navy that should never be forgotten.

"To convene a court of inquiry under these circumstances would seem to imply a doubt on the part of the Department where no doubt exists; and instead of ordering an investigation, it tenders to you, and through you to the officers and men of your command, its sympathies for the exposures and hardships you have encountered, and its profound thanks for the fidelity with which you performed your duty in a crisis of appalling danger."

Seumanutafa and Fa'atulia

On April 8, 1908, William Churchill, formerly United States Consul General to Samoa, wrote from New York to Lieutenant Commander E. L. Beach, U.S.N., then Secretary-Treasurer of the Naval Institute, the following letter in presenting two photographs to the Naval Academy (see pages XVIII and XIX this issue):

"If it be at all worth the while to bear a brave deed in mind, if there is to remain to the Navy of the United States the recollection of one debt which it must ever owe and which, under the President's own hand, it has acknowledged, surely there must be some

spot in the great hall of memory at the Naval Academy in which to niche these autographed photographs of Seumanutafa, Chief of Apia, and of Fa'atulia, his wife, brave man, noble woman.

"Official reports have recorded the deeds of Seumanutafa and his lifelong and unswerving friendship for America. Yet it will not come amiss to recite once more the crowning fact that, when our sailor lads were battling for life in Apia Harbor, a man there was upon the beach who was all man.

"That dark March day of 1889, the rains descended and the floods came. The rain came down in blocks, the Vaisigano stream was booming in state from the downpour on the Upolu mountains steeply rising behind Apia and was discharging all its fury upon one arm of the little harbor, where it met and warred with the swirl of the whole Pacific Ocean driven through the harbor mouth and to that very spot under the tempest blast of hurricane. The *Nipsic* had finished her wonder feat of scrambling, crawling, crashing over the reef's coral ledge, and lay crippled, a wreck, a little south of the *Vandalia*. When her sail of men had proved ineffective the *Trenton* came fighting along to that one point where fiercely boiled that caldron of the water of the angry sea and the water of the burdened hills, the mouth of that Vaisigano, the 'river of fragrant blossoms', where most times women laugh and chattter at their task of washing clothes in its warm and sluggish shallows.

"Hope for the ship there was none, for her company there seemed less.

"Out into that hell of waters one man inched his way, one hand holding out a hero clutch over that dark turmoil and that the stronger hand, the left, behind him in the firm brown clasp of a trusty tribesman. Barefooted he won a footing on the jagged coral—as well might one elect to tread on broken bottles—and in that millrace set his form against the send of the mighty sea. Into the tumult followed upon his chief the second man, one hand holding his leader, one hand grasping both to sure hand-clasp upon the shore. Brave man by brave man this chain linked out from the beach, each bare foot taloning the jagged reef, each breast, in man's triumph over Nature the brute, buffeting back the waters. Link by link, and every link a man, those Samoans paid out the line of their generously jeoparded lives, the lifeline of the *Trenton*, until their leader was barely holding his own, his head awash. Yet his one free hand—with one hand he held to life, with one he grappled death, the death brooding over American sailors—his one free hand was ever reaching blindly into the dark and deadly turmoil and what he seized he held, a *Trenton* man snatched from death, and passed him back along the line from one mighty arm to the next and so to shore, so back to life. How many were saved by his untiring clutch no man ever knew, himself least of all, for in that theater of heroism none stood by to tally. But ever at the head of the line of life, ever playing a man's part, that man of men was Seumanutafa.

"As fast as each man was brought to shore he was hurried to the chief's house, there to pass under the ministrations of Fa'atulia, who worked untiringly and directed her handmaidens in completing the rescue.

"When I think upon that bitter day and its unshattered courage in disaster afloat met by such unshrinking bravery of our Samoan friends ashore, when I recall how many of us have gone already in their last account who knew Seumanutafa, even as the hero chief has passed where went Kimberly and Dick Leary before him, even as all of us must leave a brave world which honors its brave, then I feel sure that somewhere near the *Vandalia's* historic flag which I have already sent to the Academy there will be found a little space

for two who proved to our old Navy that they were friends both in the need and in the deed.

"And when the tropic sky smiled once again upon that charnel port of dead ships, kissed warmly the scores of new graves upon the shore, when relief came and Admiral Kimberly sailed away from the warm heart of Samoa, then some unnamed bard of Seumanutafa's household poured out his soul in the 'Farewell to the Admiral.' One verse, the burden of the whole poem, I here set down with a bald rendering into English:

Tofā, mai feleni,	Good-by, my friend,
O le ā o'u tea;	I now must lose thee;
'A e folau le va'a	For the ship is going away
O le ali'i pule Amelka.	With the Admiral of America.
Ne'i galo mai Apia,	Never forget Apia,
Si o ta 'ele'ele,	Loved place of my abode,
'A e manatua mai pea,	Still cherish her in heart,
Le 'aupasēsē.	Ye men of the sea.

"A generation has sped, songs have come and gone, but this remains the one song that all Samoans always know how to sing.

"With warm regard for the Academy, with fond recollection of Seumanutafa."

The Flag of the "Vandalia" Saved by Loving Care of Woman's Hand

Six of the illustrations in this issue of the PROCEEDINGS are from a collection of nine photographs recently presented to the Superintendent of the Naval Academy by (Mrs.) Llewella Pierce Churchill, wife of the late William Churchill, formerly United States Consul General to Samoa.

The flag of the *Vandalia* has been at the Naval Academy for over fifteen years and the inside story of its rescue from oblivion by a woman's hand has just come to light. The official records simply show that the flag was sent to the Naval Academy by Mr. Churchill but the Editor has reason to believe, from recent correspondence with Mrs. Churchill, that the "official" presentation took place "after" the circumstances related by her below had occurred. In writing to the Superintendent last April, Mrs. Churchill said:

"In my womanly blunder, I really rescued this flag to the Government. I did not know that I was undoing all sorts of red tape, and going over the heads of all sorts of consul-generals, including Harold M. Sewell, who was consul-general of the United States and stationed at Apia at the time of the hurricane there, and then after Sewell, William Blacklock, vice-consul and acting consul-general, who held the post for many years, and then Mulligan for a short while only, and then my husband, William Churchill, who was appointed by President Cleveland.

"In my house cleaning, after I reached there, I found this wonderful historic flag in a closet with other old flags, and the natives told me all about it. The story of the flag interested me, and I laid it out on the grass its full length, some thirty-five feet of stripes, and I did not count the stars, for the field was moth eaten and uncertain, but you bet I did some hard thinking, and said a few hard words, out loud, to the trade winds. I asked no more questions, though, of anybody, I just picked up "Old Glory's" ghost, and gently, too, for it was falling to pieces, and I folded it up reverently, for it was Admiral Kimberly's flag. I did not say one word to the Consul-General of the United States, who at that time was William Churchill, and he was only my husband, and husbands don't

count, at least, in the South Pacific, or in an emergency case like this, when an Admiral's flag [EDITOR'S NOTE.—She does not mean his personal flag] has to elope with itself to the Naval Academy, or stay in a dark, damp, dirty closet, and let the moths eat it away. Then, unknown to anyone but myself, I got busy and hid it away in a deep box, and marked it "Freight." Then my native house-boy nailed up this box for me and rowed it out in his canoe to the steamer in port, bound for San Francisco. When the box was opened there, they found my pet house cat, within the folds of the flag, a *dead* game stowaway.

"This is a true story of the 'cat and the admiral's flag,' and well worth a place in naval history, but, please, sir, don't give me away, or find me guilty of anything but the very best intentions, and the American woman's determination to overcome *all* obstacles.

. . . . . .

"And now that I have retired from active life out in the world, and have just rounded out my three score years and ten, the time allotted to the life of man, I realize now, that I am borrowing the rest of my days from "old Father Time." Therefore, I want anything I may have to give, to go to places where they will do the most good, and be of special interest where they are placed.

"Therefore, I offer these photographs of historic value and interest to the Navy.

"I have had a most charming and eventful life, with my father and my husband in many parts of the world, and I have given generously of special collections I have made in my travels; one of my special collections of interest, more than 300 large native photographs to illustrate lectures at the Museum of Natural History, New York City, curios, fine mats, tapa cloth, etc., are also in this collection of Pliny Goddard, Curator of the department.

"I have written for magazines and the newspapers many articles and stories, and *Samoa 'Uma*, one of my books, had a large sale, also a number of patriotic songs which were published during the World War.

"I am now facing my *sunset*, I am in the twilight of my life, and the shadows lengthening, and I am thinking of what I can do with what I have accumulated, and of what I now possess, that will be of interest or pleasure to others."

Writing again on April 26, after Admiral Nulton accepted the photographs, she said:

"I have just received your cordial letter and I am so delighted at its contents, and referring to the flag of the *Vandalia*, God bless that particular flag, and I am most happy to know that I am the one who rescued that flag from the moths, dust and mildew, and out of a neglected closet of shelves in the Consulate of the United States at Apia, Samoa, in 1897, where it had lain in its *grave* as it were, since the hurricane of 1889. And I am so happy to know from you that it is now in a case in Recreation Hall at the Academy. I may never see it again, but the memory of that flag and the lump in my throat, when I found it, will always be with me, fresh in my memory.

. . . . . .

"I am sending them [meaning the nine photographs] to our Naval Academy at Annapolis with a wealth of good wishes, and with the knowledge of when I have 'put out to sea' for the last time, that there is at the Naval Academy the photos of scenes familiar to me, and with the *Vandalia* flag, just where I most want them to be."

EDITOR'S NOTE: The *Trenton's* flag was presented to the Naval Academy by Lieutenant Samuel L. Graham, U.S.N., March 9, 1914).